The Dissertation Committee for Christian Georg Rathmann certifies that this is the approved version of the following dissertation:

Event Structure in American Sign Language

Committee:

_____
Carlota S. Smith, Supervisor

_____
Richard P. Meier, Co-Supervisor

_____
Rajesh Bhatt

_____
Lisa Green

_____
Knud Lambrecht

Event Structure in American Sign Language

by

Christian Georg Rathmann, M.A.

Dissertation

Presented to the Faculty of the Graduate School of

the University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

December 2005

Acknowledgments

There are many people including family members, teachers, colleagues and friends who have been involved in my life and have supported me in achieving my personal and academic goals in various ways. I find it difficult to express my deep gratitude to them all. The list of names mentioned here is in no way exhaustive.

Die Doktorarbeit ist meinen Eltern, Matthias und Cordula Rathmann, und Geschwister, Juliane Schneider und Sebastian Rathmann, gewidmet. An dieser Stelle möchte ich mich vom ganzen Herzen bei Euch für Eure tatkräftige Unterstützung und Liebe bedanken. Vielen Dank für alles, liebe Eltern, Juliane und Sebastian, das ihr mir gegeben habt!

I was fortunate to have Professors Carlota Smith and Richard P. Meier as my advisors and friends during my graduate career at the University of Texas at Austin. They shared with me their extensive knowledge of their research areas and provided guidance and friendship. Not only were they always available to discuss many exciting topics, but also they tirelessly supported me in pursuing my research interests. I would like to thank Carlota and Richard for your generous support, advice and friendship. I have learned a lot from you both!

Since the beginning of my graduate training at the University of Texas at Austin, Professors Lisa Green and Rajesh Bhatt in the Department of Linguistics were always happy to share with me their secrets on how to create a link between undocumented languages and general research in syntax and semantics. They have been keen to learn the linguistic structure of signed languages and to provide me with valuable feedback on my research activities. Later, Professor Knud Lambrecht in the Department of French and Italian also expressed interest in my work. In the dissertation stage, they served as members of my doctoral committee and provided me with moral and intellectual support. For this, I am grateful, Lisa, Rajesh and Knud.

During my graduate career, I not only received intensive training in sign linguistics, semantics and syntax but also built a solid foundation in linguistics. I had highly stimulating discussions with Professor Elizabeth Keating in the Department of Anthropology on her work in linguistics anthropology, and with Professors Scott Myers, Björn Lindblom, both in the Department of Linguistics, and Peter McNeilage in the Department of Psychology, on sign phonology and phonetics. In addition, I had numerous good discussions with ASL lecturers Carol Seeger, Franky Ramont, Perry Conolly and Lisa Bosson on sign language teaching. Thank you all very much.

The University of Texas at Austin was an excellent choice to pursue my graduate career in linguistics not only because of its top-class faculty but also because of the wonderful community of graduate students specializing in signed languages: David Quinto-Pozos, Kearsy Cormier, Claude Mauk, Terra Edwards, Aaron Shield, Adrianne Cheek, Mandy Holzrichter, Ginger Pizer, Heather Knapp and Daisuke Sasaki. I appreciated learning their research findings, and also appreciated our friendship, discussions, company, gatherings and support system. Y'all were terrific!

Professors Karen Emmorey (SDSU), Diane Brentari (Purdue), Diane Lillo-Martin (University of Connecticut), Ronnie Wilbur (Purdue) and Carol Padden (UCSD), Jill Morford (University of New Mexico) and Ted Supalla (University of Rochester) were influential figures in my graduate studies, as they showed genuine interest in my work and supported me throughout different stages of my career. I appreciate your involvement very much.

As a Marie Curie fellow, I stayed at City University in London, U.K. during the spring semester of 2003. There, I had an opportunity to immerse myself in British Sign Language, in the British Deaf Community and in research on the linguistics of BSL. It was a privilege for me to work with Professor Bencie Woll, Gary Morgan, Frances Elton and Tessa Padden. Thank you for giving me this unique opportunity!

Some of you might wonder how I landed in the sign linguistics field. At my *Schwerhörigengynmasium* in Berlin, Germany, each student was required to do a research project. For my project, my first thought was to describe some linguistic

properties of German Sign Language (DGS), my first language. I contacted Professor Siegmund Prillwitz at University of Hamburg for some references. He was very generous in giving me some of his books on sign linguistics. In the same year, I enrolled at the University of Hamburg and majored in Deaf Education. It was around that time that Heiko Zienert and Alexander von Meyenn, both Deaf lecturers at the same university, strongly encouraged me to change my major and to study linguistics "Du kannst das!" (*You can do it!*"), they said. After changing my major, they continued their moral and intellectual support. Vielen Dank, dass ihr mir ermöglicht habt, Gebärdensprachlinguistik zu studieren, Siegmund, Heiko und Alexander!

Sign language interpretation was essential for ensuring smooth communication and education at both universities in Hamburg and Austin. I thank Andrea Schaffers, Simone Flessa, Gudrun Hillert and Maike Vaupel in Hamburg; and Shirley Gerhardt, Audrey Ulloa, Kristin Schwall-Hoyt, Katie LaSalle and Sondra Marks in Austin, not only for their hard work but also for backing me all the way.

Sometimes I felt like I needed some refuge from academia. I was lucky to rely on spiritual support from my close friends Angela Staab, Christian Borgwardt and Christian Peters in Hamburg, Germany; Martha Guenther and Robin Ching in Austin; and Hilde Haualand and Krister Schönström in Scandinavia, Thank you for your friendship, which I value highly!

Now I would like to take an opportunity to thank Gaurav Mathur and Gene Mirus for their special and unique friendship. I myself cannot find any right words for thanking them. They were always there when needed, personally, emotionally, intellectually and academically. I cannot imagine how I could survive my graduate career without them.

In the spirit of Kenneth Hale, who has immensely influenced me through several encounters for which I will always be grateful, the study of sign languages is not only for the sciences but also for the Deaf communities, to which my heart will always belong.

Event Structure in American Sign Language

Publication No. _____

Christian Georg Rathmann, Ph.D.
The University of Texas at Austin, 2005

Supervisors: Carlota S. Smith and Richard P. Meier

This dissertation investigates the event structure of ASL. Every sentence has a temporal schema that is associated with a particular situation type and a viewpoint. Situation type concerns the internal temporal structure of an event and is composed from the temporal features of dynamism, duration and telicity. ASL shows linguistic correlates for five situation types: states, activities, semelfactives, achievements and accomplishments. These are the same situation types that are manifested in other languages. Moreover, ASL exhibits four morphemes that relate to situation type: continuative, iterative, habitual and hold. Viewpoint determines whether part or all of the event is viewed. All three viewpoints – perfective, imperfective, and neutral – are attested in ASL. Perfective viewpoint is encoded by clause-final FINISH. This viewpoint is distinct from the past, which is not overtly marked but implied through pragmatic defaults, and from the perfect, which is marked by pre-verbal FINISH. A special form of the imperfective viewpoint is encoded by the conative morpheme, which focuses on the stages prior to an event. Otherwise, there is no morpheme for the general imperfective viewpoint. Both FINISH and the conative morpheme are optional. In case neither morpheme is present, the sentence is zero-marked and receives neutral viewpoint, meaning that it allows either an open or closed interpretation. In the absence of these morphemes or overt temporal adverbs or other similar elements, the temporal schema of a sentence determines its temporal interpretation based on a number of pragmatic defaults. Thus, while ASL does not have a rich tense system, it presents a rich and complex aspectual system that plays a role even in temporal interpretation.

Table of Contents

List of Figures

Chapter 1: Introduction

1.1 Event structure in American Sign Language

The dissertation pursues the question of how event structure is constructed in American Sign Language (ASL). ASL is a natural language used primarily by the Deaf community in North America, specifically the United States and some parts of Canada, excluding Quebec. The number of ASL signers in the United States is said to range between 500,000 and two million (Schein 1989). Based on data from the Census Bureau, ASL represents one of the most widely used minority languages in the U.S., after Spanish, Italian, German and French (Grosjean 1982). ASL is transmitted across generations through residential schools for the Deaf, Deaf children of Deaf parents, and Deaf clubs (Lane, Hoffmeister and Bahan 1996).

Event structure is a broad term and refers to many notions. Here, it is used as a cover term for both aspect and temporal interpretation in grammar. Again, the term 'aspect' covers several notions. Here, 'aspect' includes both 'situation aspect' and 'viewpoint aspect.' Let us consider a few examples from English to see some of the notions that fall under ' situation aspect'. Compare the following pair of sentences.

(1) a. I saw John walking to the store.
b. # I saw John knowing history.

These sentences have similar structures: they involve a verb of perception, *see*, that embeds a sentence about John. Yet the second sentence is odd, as indicated by the # symbol. What is it about this sentence that makes it marked compared with the first sentence? The embedded sentence in the first sentence describes a person doing something that has taken place at a specific time and location, i.e. an *event*, whereas in the second sentence, the embedded sentence describes a certain state of affairs about a

person, i.e. a *state*. What distinguishes events from states is one topic of the study of ' situation aspect'.

There are other distinctions which also pertain to the study of situation aspect. For instance, why is it well-formed to say *for two hours* with *John slept* and *in two hours* with *John won the game* but not vice versa?

(2) a. John slept for two hours.
b. # John slept in two hours.

(3) a. John won the game in two hours.
b. # John won the game for two hours.

The expressions *sleep* and *win the game* both describe events, yet they apparently have different properties that determine whether they are compatible with *for two hours* versus *in two hours*. One property behind the above distinction is duration, i.e. whether an event unfolds over a period of time or occurs quickly in an instant.

Yet another property that is related to situation aspect is seen through semantic entailment. The first sentence in the following example entails the second sentence. It is clear that if John ran to the store, then John ran. However, the entailment does not occur the other way around. If one only knows that John ran, she does not necessarily know whether John made it to the store. Why does the entailment occur only in one direction?

(4) a. John ran to the store.
b. John ran.

In this case, the relevant property is a feature called 'telicity' which has to do with whether an event has an inherent ending point: the first sentence is telic while the latter sentence is not.

The study of aspect is concerned not only with properties of eventualities (states and events), i.e. situation aspect, but also with how they are portrayed linguistically, which can ultimately affect their interpretation. This is the study of viewpoint aspect. The following two sentences are identical, except for the form of the verb. The first sentence has the 'progressive' form of the verb, as marked by *-ing* and an auxiliary, while the second sentence has a simple past form of the verb.

(5) a. John was running to the store.
b. John ran to the store.

As seen from the previous example, *John ran to the store* describes an event that has an ending point. In the progressive form, the interpretation is somewhat different. While the ending point exists in principle, one does not actually see it achieved, because the progressive form reports only a part of the event. The progressive sentence could be followed by a conjoined sentence that indicates the endpoint was not achieved, as in *John was running to the store when he tripped over a crack in the sidewalk*.

Aspect, including both situation aspect and viewpoint aspect, stands in contrast to tense, which functions to locate an eventuality relative to the time of the utterance. Both sentences below are in the progressive form and thus share the same aspect. They only differ in tense: in the absence of other context, present tense in the first sentence indicates the event is taking place while the speaker is speaking, while past tense in the second sentence shows that it occurred before the speaker spoke.

(6) a. John is running to the store.
b. John was running to the store.

This dissertation is about how the components of aspect are expressed in American Sign Language (ASL). There is some literature on the expression of aspect in ASL, most notably Klima and Bellugi (1979). Much of it has focused on the relationship

between aspect and morphology. For instance, Klima and Bellugi identify a number of morphological forms that express distinctions similar to those seen in English above. To take one simple example, there is a morphological form called the 'continuative'. When it is applied to the verb stem, the resulting meaning is that the event took place for a long time.

(7) a. JOHN STUDY
'John studied.'

b. JOHN STUDY+continuative
'John studied for a long time.'

Figure 1. STUDY

Figure 2. STUDY+continuative

Later researchers like Liddell (1984), Wilbur (1987), and Brentari (1998) have also focused on identifying morphological forms that express aspect in ASL. Liddell, for instance, identifies an 'unrealized inceptive' form, and Brentari discusses a 'delayed completive' form.

An issue arises from these studies of aspect in ASL: how many morphemes are there in ASL that mark aspectual distinctions, and what are they? This issue is taken up in Chapter 2. I review the inventory of aspectual modulations proposed to date for ASL and suggest that there are six aspectual morphemes (continuative, iterative, habitual, hold,

conative and FINISH). I delineate this set of morphemes from other similar looking forms such as adverbial modification and distributive quantification.

The study of aspect is not just about identifying all the morphemes that mark aspect in a given language. Most important, the study of aspect takes place at the level of the sentence. To see this point, recall the difference between *John ran* and *John ran to the store*. The first sentence describes an event that does not have an inherent endpoint. The addition of a prepositional phrase in the second sentence contributes an inherent endpoint to the event, and makes the sentence comparable to other basic sentences that express events with inherent endpoints, like *John won the game*. Inherent endpoints and other properties of aspect in general must be understood by taking the whole sentence into account, and by examining the interaction between grammatical elements within the sentence.

The study of aspect, and more generally the study of event structure, has yet to be pursued in depth in ASL and represents the main goal of this dissertation. There are two motivations for taking up this study in ASL. First, as demonstrated in the following chapters, there is cross-linguistic variation in the expression of aspect. For instance, the distinction between events with inherent endpoints and those without is seen in English through - among other ways - the addition of a prepositional phrase, but in Navajo, the distinction is not marked by any linguistic correlate (Smith 1997). ASL represents one language family that has yet to be included in the cross-linguistic typology of aspect. The other motivation is that the language occurs in a different modality than many languages in which aspect has been examined. One major question is whether the visual-manual modality of ASL has any effect on the expression of aspect in that language. By addressing this issue, the dissertation takes us closer to the step of identifying cross-modal similarities and differences in the grammatical encoding of aspect.

In providing the first systematic account of event structure in ASL, the dissertation sifts and integrates previous work by discussing data that appears in journals, books, teaching workbooks (like Baker-Shenk and Cokely 1980), and commercially distributed videotapes featuring ASL narratives and by expanding the empirical

discussion. One potential issue here is regional variation, which is well documented in ASL (Lucas 1995, Lucas, Bayley and Valli 2001). Regional variation is not expected to affect the discussion here, since it is mostly restricted to the lexicon and phonology. Variation at the grammatical level may be attributed to being in different phases of grammaticization (Janzen 1998, Shaffer 2000, Janzen and Shaffer 2002, Wilcox 2004, Pfau and Steinbach 2004). For instance, Janzen (2002) argues that the sign glossed as FINISH is undergoing grammaticization from a main verb meaning 'complete' to a function word. It is possible that in some regions, the grammaticization has yet to occur so that FINISH is not used as a function word. Since this dissertation focuses on event structure from a synchronic point of view and clarifies meanings of words or sentences in specific contexts, the issue of grammaticization is outside the scope of the dissertation.

The dissertation addresses many questions about event structure in ASL that have not been previously considered. In order to do so, this dissertation chiefly follows the two-component theory of aspectual systems (Smith 1997), since that theory leads to many insights about the aspectual system of ASL. Often, the dissertation uses English as a starting point; the facts and analysis of ASL data are often different, which is not unexpected. The next section offers a brief background on the two-component theory of aspect based on English and formulates specific research questions about the aspectual system of ASL as well as temporal interpretation that will be investigated in this dissertation.

1.2 Background on aspect and specific questions

A key notion of the two-component theory of aspect (Smith 1997) is that an aspectual system consists of two components, situation aspect and viewpoint aspect. Situation aspect is concerned with the intrinsic properties of an eventuality or a situation.[1] Above, there were examples of properties of eventualities, such as duration and telicity. They fall under situation aspect. In contrast, viewpoint has to do with how an eventuality

[1] Comrie (1976) and Smith (1997) use the term 'situation' to refer to states and events both. Bach (1980) uses the term 'eventuality' for the same range. I use both terms throughout the dissertation.

is presented linguistically. The previous example of the progressive form, which focuses on a part of the event, represents viewpoint aspect.

1.2.1 Situation aspect

The most often cited author on situation aspect is Vendler (1957, 1967), who suggests that events (and states) can be categorized into one of four types.

(8) Vendler's (1967) typology
States
Activities
Achievements
Accomplishments

Smith (1997) proposes adding a fifth situation type, semelfactives, to the typology. States are non-dynamic in the sense that there is no volition or energy expended. Examples in English include *be tall*, *know history*, and *born in 1974*. The other situation types are events and have the feature of dynamism. Activities are events that do not have inherent endpoints and that occur for a period of time, like *run*, *study history*, and *sleep*. Achievements are the extreme opposite of activities: they have an inherent endpoint and happen in an instant, e.g. *win the game*, *arrive home*, and *disappear*. Accomplishments also have an inherent endpoint but take place over time: *paint the house*, *cook salmon* and *eat an apple*. Semelfactives do not have an natural endpoint and take place quickly: *wink*, *cough*, and *clap*.

One research question is which of these situation types are manifested in the grammar of ASL and how they are manifested. Chapter 3 is devoted to answering this question. After a general discussion of situation aspect, the chapter considers each situation type in turn, asking what its linguistic correlates are, if any, in ASL. The chapter also discusses shifts from one situation type to another.

1.2.2 Viewpoint aspect

The other component of aspect is viewpoint, which refers to different ways of presenting an eventuality. There are generally two ways to present an event: perfective, which views an eventuality in its entirety and presents a closed event, and imperfective, which views just a part of an eventuality and presents an open event. In the framework of Smith (1997), a third viewpoint is proposed: neutral, which, due to lack of overt marking for perfective or imperfective viewpoint, allows either an open or closed interpretation.

(9) Viewpoint aspect
Perfective
Imperfective
Neutral

Perfective viewpoint is not to be confused with telicity. Telicity is about whether there is a natural endpoint to the event. The perfective viewpoint does not require the eventuality to have a natural endpoint. For example, the sentence *John ran* denotes an event that does not have a natural final endpoint, yet it has perfective viewpoint, as indicated by the morphological form of the verb, just as *John ran to the store* (which has a final endpoint and is telic) is perfective.

Imperfective viewpoint is likewise independent of situation aspect. It is possible to say both *John was running* and *John was running to the store*. As the examples show, imperfective viewpoint in English is marked by the progressive morpheme *-ing* and the *be* auxiliary. Rather than viewing the event as a whole package, imperfective viewpoint looks "inside" the package. Depending on context, it could focus on a single stage of the event (as in *John was running when he tripped*), or on a sub-interval (as in *while John was running, he saw birds flying*).

Since morphological marking within an English sentence always indicates whether that sentence is perfective or imperfective, there is no ambiguity with regard to viewpoint. Thus there is no possibility of neutral viewpoint in English. However,

depending on their morphological systems, other languages may allow ambiguity in viewpoint and may thus permit neutral viewpoint.

An important research question is how viewpoint aspect is linguistically conveyed in ASL. That is, how are perfective and imperfective viewpoint marked in ASL, and how does one know? Does ASL also allow neutral viewpoint? These questions constitute the theme of Chapter 4. Providing additional background on viewpoint aspect as a first step, the chapter considers perfective and imperfective viewpoint in turn. It argues that there is an overt marker for perfective viewpoint, and while there is one overt marker for imperfective viewpoint, it is for a special case of an imperfective; otherwise there is no viewpoint morpheme for the general imperfective. If neither the perfective viewpoint morpheme nor the special imperfective viewpoint morpheme is present in the sentence, neutral viewpoint occurs.

1.2.3 Temporal interpretation

While aspect is encoded through situation type and viewpoint, the study of event structure as defined in the beginning is incomplete without taking another level into account: temporal interpretation. Temporal interpretation refers to determining when an eventuality has taken place, either on an absolute time line or relative to another time such as a pre-set reference time or the time of the utterance. Temporal interpretation is achieved through overt tense marking in languages like English. There are, however, a number of languages which lack overt tense marking, and ASL is one of them.

Thus another research question is how temporal interpretation is achieved in a tenseless language like ASL. This question is the focus of Chapter 5, and turns out to intersect with questions about aspectual interpretation, because the chapter argues that in the absence of overt tense marking, ASL uses pragmatic defaults that depend on the aspectual interpretation of the sentence. In addition, ASL uses other means such as adverbials and reference-time setting. These strategies are detailed in the chapter, and compared with strategies for temporal interpretation in other tenseless languages like Chinese.

1.2.4 Notational conventions

To address these research questions, I use informal temporal schema to make explicit the temporal properties of eventualities and their temporal relation to one another. Temporal properties include whether eventualities have endpoints, duration, and boundedness. Temporal relations concern whether one eventuality precedes another; whether an eventuality is related deictically to the present or anaphorically to a reference time. Temporal schemas illustrate these properties through the use of notational conventions.

For temporal properties, I use Smith's (1997) notation. Temporal schemas are constructed on a timeline, which may be represented by dashes to indicate an undifferentiated period of time or by dots to indicate successive stages in a period. Specific times are represented by t_1, t_2, etc. Intervals may be bounded by an initial endpoint (I) and/or a final endpoint (F). Where appropriate, the endpoints may be further annotated, e.g. as an arbitrary endpoint or as a natural result. E represents a single-stage event

(10) Smith's (1997) notation for a temporal schema

---------	undifferentiated period of time
.....	successive stages in a period
t_1, t_2, ...	specific time point
I	initial endpoint
F	final endpoint
F_{Arb}	arbitrary final endpoint
F_{NatR}	final endpoint as a natural result
E	(single-stage) event

In addition, I use an adaptation of Reichenbach's (1947) system to illustrate temporal relations between different events or times. E serves as a point of connection

between the two notational systems. Above, it represents the event itself, while in the system below, it represents the time of the event.

(11) An adaptation of Reichenbach's (1947) notation
E = event time, the time during which the event unfolds
S = state time, the time during which the state takes place
R = reference time, the time to which adverbs refer
U = utterance time, the "now" of temporal deixis

With this system, relationships between the different times can be notated as follows. A comma between two times indicates they occur at the same time. A horizontal dash establishes a precedence relation. Below are examples of this notation.

(12) Examples of temporal relations

R, P	reference time is the same as utterance time
E -- P	event time precedes utterance time

Klein, Li and Hendricks (2000) view aspect and tense as indicating temporal relations among different temporal intervals: tense indicates a temporal relation between topic time (equivalent to R in the above system) and the time of the utterance (equal to U in the above system), and aspect indicates a temporal relation between topic situation (= R) and the time of the situation (= E or S).

1.3 Assumptions about ASL structure

This section provides a brief background on ASL structure. It gives just enough background so that readers unfamiliar with the language may be able to follow the rest of the dissertation. The section also clarifies assumptions I make about ASL structure, particularly with regard to phonology, morphology and syntax.

1.3.1 Phonology

For the level of phonology, it is sufficient to understand that signs are made by configuring the hands into a particular shape and orientation (called ‘handshape’ and ‘orientation’ respectively) and moving them in a specific way (‘movement’) to certain targets on the body or in signing space (‘location’). Movement can also consist of changing the handshape/orientation at a given location, or overlaying the handshape/orientation change with a path movement of the hands in signing space. Signing space refers to the physical area in front of the signer, ranging along the length of bent arms and from the head to the waist. Below are minimal pairs that illustrate the four parameters. Figures 3 and 4 show a minimal pair for handshape; Figures 5 and 6 for orientation; Figures 7 and 8 for location; and Figures 9 and 10 for movement.

Figure 3. CANDY

Figure 4. APPLE

Figure 5. SIT

Figure 6. NAME

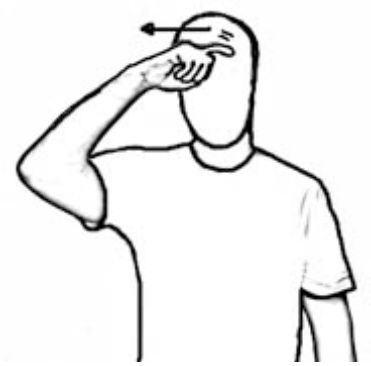


Figure 7. SUMMER

Figure 8. DRY

Figure 9. SIT

Figure 10. CHAIR

In addition to these four formational parameters first noted by Stokoe (1960) and Battison (1978), nonmanual signals like facial expressions and mouth formations form an important part of signs.

1.3.2 Morphology

Morphology in ASL tends to be overt, so that each form tends to have a specific meaning. The inflectional morphology of ASL marks four grammatical features: person, number, class and aspect. Person features that are marked are first person and nonfirst person. The signer is generally first person, and all other referents are nonfirst person. There is no grammatical distinction between reference to the addressee and reference to other entities, so that second and third person are collapsed together as nonfirst person (Meier 1990).

The number feature can be singular or plural. The plural feature is further differentiated into dual, exhaustive and multiple (Klima and Bellugi 1979, Padden 1983). Exhaustive number is used when an event is distributed over individuals, as in 'I gave a book to each of the students in the classroom', while multiple number is used when the plurality of the group is emphasized, as in 'I gave books to the students.'

The class feature has been recently proposed by Pfau and Glück (1999) for German Sign Language (DGS) and Zwitserlood (2003) for Sign Language of the Netherlands (NGT), among others, to encode some property of a noun that is marked on the verb, akin to the Bantu noun classes. The class feature is assumed also to appear in ASL. Two of the possible values for the class feature are 'vehicle' and 'person'. Nouns referring to cars, motorcycles and bicycles have the class feature of 'vehicle' while nouns referring to women, teachers, and boys have the class feature of 'person'.

Finally aspect encodes some property of an event. Two examples of aspectual morphemes in ASL are continuative and iterative. They receive a full discussion in Chapter 2.

These features are all marked on verbs in ASL. Number may also be marked on a few nouns. Verbs fall into one of three groups depending on the particular features they mark: plain, agreeing and spatial (Padden 1983, 1990). Plain verbs are those that do not mark any features except for aspect. Agreement verbs mark person, number and aspect. The last group, spatial verbs, do not inflect for person nor number but may inflect for class and aspect. Below are examples from Padden (1990) for each group of verbs.

(13) Padden's (1990) typology of verbs in ASL

a. Plain verbs
LOVE, CELEBRATE, LIKE, TASTE, THINK. WONDER

b. Agreement verbs
GIVE, SHOW, TELL, ASK, SEND, BAWL-OUT, INFORM, ADVISE, FORCE, PERSUADE

c. Spatial verbs

MOVE, PUT, CARRY-BY-HAND, VEHICLE-MOVE, PERSON-MOVE, HIT-IN-EYE

VEHICLE-MOVE is an example of a 'classifier predicate' which shows the motion of an entity in signing space and marks the class feature of the entity at the same time. Supalla (1986) and Schick (1990) provide a comprehensive typology of classifier predicates that appear in ASL. The main types of classifier predicates in addition to MOVE include LOC, MANIPULATE and HANDLE. The predicate LOC functions to show the location of an entity, while MANIPULATE represents the manipulation of a body part such as ears, head, and feet, and HANDLE shows the instrument with which an action is carried out. Most of the classifier predicates fall into the class of spatial verbs. In addition, there are spatial verbs, like PUT, which do not inflect for the class feature but do use the signing space to show the location or movement of an entity.

The fact that aspect can appear with all groups of verbs indicates that it is fundamentally different from agreement with person, number and class features. Agreement is relational - the features of another element are copied on the verb and hence these features are in a sense redundant, whereas aspect is not.

Inflectional morphology in ASL tends to be "simultaneous" as opposed to "sequential" in the sense that it involves altering some phonological property of the verb rather than affixing segmental material to the verb (Klima and Bellugi 1979, Liddell and Johnson 1987). Verbal agreement with a noun in its person feature, for example, is manifested through a change in the orientation and/or direction of the movement of the hands as illustrated in the contrast between Figure 11 and Figure 12. The first subscript indicates subject agreement and shows the person (and number) features of the subject; likewise, the second subscript marks object agreement and tells the person and number features of the object.

Figure 11. $_{1st.sg}ASK_{non1st.sg}$

Figure 12. $_{non1st.sg}ASK_{1st.sg}$

Number agreement occurs through reduplication for the exhaustive feature and through the displacement of the hand in a horizontal arc sweep for the multiple feature, as shown in Figures 13 through 15.

Figure 13. $_{1st.sg}ASK_{non1st.exhaustive}$

Figure 14. $_{1st.sg}ASK_{non1st.multiple}$

Figure 15. $_{non1st.sg}ASK_{1st.multiple}$

Class agreement is conveyed through handshape. For instance, if the entity is specified, say, as a car, the noun has a 'vehicle' class feature which is marked by a particular handshape (the 3 hand in this case) in the sign VEHICLE-MOVE.

Figure 16. VEHICLE-CL+MOVE

Aspectual morphology is also of a simultaneous nature, as will be shown in Chapter 2. In general, aspectual modulations tend to take the form of altering the length and speed of the movement of the verb in a specific way and/or repeating it.

It is apparent from above that concatenative morphology, such as segmental affixation, is not used for inflectional processes. Concatenative morphology occurs mostly in word formation processes, e.g. derivational affixation and compounding. As shown in the following examples, the resulting meaning of such processes can be idiomatic.

(14) a. Derivational affixation

-ER:	TEACH+ER	'teacher'
	LEARN+ER	'student'
-ZERO:	TASTE+ZERO	'not my type'
	TOUCH+ZERO	'not use'

b. Compounding

FOOD+MORNING	-->	BREAKFAST
SLEEP+SUNRISE	-->	OVERSLEEP
LOOK+STRONG	-->	RESEMBLE
TRUE+BUSINESS	-->	SERIOUSLY

For a complete discussion of word formation processes, the reader is referred to Aronoff, Meir, and Sandler (2005).

1.3.3 Syntax

I now turn to another level of grammar, syntax. This section discusses basic word order and variations on this order. Then it considers the role of nonmanual signals in the syntax of ASL, and then turns to the question of whether the functional categories of definiteness and tense exist in ASL.

1.3.3.1 Word order

The basic word order is SVO, based on transitive sentences containing animate nouns that can be swapped in a sentence (Fischer 1975). In the absence of any other context or information, the following sentences have one unambiguous meaning.

(15) a. JOHN LIKE MARY
'John likes Mary.'
* 'Mary likes John.'

b. MARY LIKE JOHN
'Mary likes John.'
* 'John likes Mary.'

Due to the realization of person and number features on some verbs, the subject and the object do not always have to be pronounced (Lillo-Martin 1991). Thus, if the subject and the object have been referenced earlier in the discourse, and if the verb agrees with both nouns, it is possible to have a verb as the whole sentence. IX stands for 'Index' and is the standard gloss for a personal pronoun.

(16) (JOHNi IXi) (MARYj IXj) iBAWL-OUTj
'John bawled out at Mary.'

Verb agreement not only licenses pro-drop but also allows other word orders, as seen in the above example. At best, the changes in word order convey subtly different meanings from the basic order that indicate what is focused and what is not.

In addition, ASL licenses variation on the basic SVO order in the presence of other signals. For instance, if the verb contains a bound aspectual morpheme (either relating to situation aspect or viewpoint aspect), the order is OSV or S(V)OV (Liddell 1980, Fischer and Janis 1990, Chen-Pichler 2002).

(17) a. TOMATO GIRL EAT+durative
'The girl ate tomatoes for a long time.' (Liddell 1980)

b. SALLY TYPE PAPER TYPE+continuative
'Sally typed the paper continuously.' (Fischer and Janis 1990)

Likewise, when the verb shows the location of an entity or shows the instrument used for carrying out an action, the order is usually OV (Kegl 1976, Liddell 1980, Fischer and Janis 1990, Chen-Pichler 2002).

(18) a. MONEY PUT-on-table
'Just put the money on the table.' (Chen-Pichler 2002)

b. O-I-L POUR-around
(reciting a recipe) '. . . and then you pour in some oil' (Chen-Pichler 2002)

Liddell 1980 and Fischer and Janis 1990 suggest the alternative order is due to some heaviness constraint which prefers to place 'heavy' elements at the end of the sentence and assume that the morpheme makes the verb heavy. Matsuoka (1997), Braze (2004) and Chen-Pichler (2002) assume that alternative word order is derived through 'object shift', through the movement of the object to a higher specifier position in syntactic structure that appears to the left of the verb. Matsuoka suggests that this position is the specifier of AgrOP (Object Agreement Phrase), while Braze and Chen-Pichler argue it to be Aspect Phrase (AspP).

Apart from modulations of the verb, nonmanual signals may license different word orders as well (Liddell 1980). The most well known example is topicalization. Aarons, Bahan, Kegl and Neidle (1992) and Aarons (1994) distinguish three types of topicalization, each of which is exemplified below. Any noun phrase, including those that denote humans, can be topicalized. They are accompanied by topic markers, which are notated as 't' in the examples. Again, topicalization affects the meaning of the basic sentence only with regard to information structure, such as what is focused and what is not.

(19) a. Topicalization
_____t
B-A-G-E-L$_i$ JOHN LIKE t_i
'Bagels, John likes.'

b. Left dislocation
_____t
JOHN$_i$ MARY LIKE IX$_i$

'John, Mary likes him.'

c. Base-generation

_____t

MEAT JOHN LIKE LAMB

'As for meat, John likes lamb.'

(Aarons, Bahan, Kegl, and Neidle 1992: 132)

In short, topicalization moves a syntactic constituent to the front; left dislocation involves a noun phrase in the left-peripheral position with an overt pronoun in the sentence referring back to it, and base-generation places a noun phrase at the left edge which has some class membership relation (in terms of conceptual categories) to a noun phrase in the sentence. Aarons (1994) claims that the topic marker in each of the sentences above is formationally different.

For the purpose of this dissertation, the first kind, topicalization, is of greatest interest since it often co-occurs with verbs containing bound aspectual morphemes, although it does not have to, as seen earlier in this section. In this construction, a particular nonmanual signal appears with the topicalized constituent: raised eyebrows, widened eyes, and tilting the head slightly back. The use of topicalization may trigger O, SV order as in the example above (Liddell 1980); other word orders like OV, S or VO, S may also be licensed by topicalization.

1.3.3.2 Nonmanual signals as grammatical markers

The topic marker is one of several nonmanual signals which serve as grammatical markers in syntax. Other nonmanual markers are the y/n marker for yes/no questions, the whq marker for wh-questions and the neg marker for negated sentences (Baker 1976, Liddell 1980, Wilbur 1987, Neidle, Kegl, MacLaughlin, Bahan and Lee 2000, Petronio and Lillo-Martin 1997, and Pfau 2002).

y/n

(20) a. WOMAN FORGET PURSE

'Did the woman forget the purse?' (Liddell 1980: 3)

whq

b. JOHN BUY WHAT

'What did John buy?' (Petronio and Lillo-Martin 1997: 26)

neg

c. JOHN NOT LIKE TOMATO

'John doesn't like tomatoes.' (Aarons, Bahan, Kegl and Neidle 1992: 113)

The y/n marker consists of raising the eyebrows and tilting the head slightly forward, while the whq marker involves lowering the eyebrows and tilting the head forward. The neg marker is manifested by shaking the head side to side with a slight frown. The non-manual markers generally appear over the part of the sentence that they have scope over. Thus the question markers extend over the whole sentence, while the neg marker starts from the part of the sentence beginning with the negation word NOT.

In some cases, the manual sign may be omitted, since the non-manual marker is sufficient to carry the same meaning. There is no difference in meaning between the following two sentences.

neg

(21) a. JOHN NOT LIKE TOMATO

'John doesn't like tomatoes.'

neg

b. JOHN LIKE TOMATO

The positioning of the wh-word, the possibility of omitting the wh-word and the scope of the whq marker are subject to several conditions. For further discussion regarding the structure of wh-questions, the reader is referred to Petronio and Lillo-Martin 1997 and Neidle, Kegl, MacLaughlin, Bahan and Lee 2000.

1.3.3.3 Definiteness and tense

So far, it is shown that ASL has agreement markers for person, number and class as well as inflectional markers for aspect. It also has grammatical markers for questions and negation. Two further functional categories that are prominent in the syntax of many languages are definiteness and tense. For the purpose of this dissertation, it is understood that there is overt marking for definiteness but not for tense in ASL.

Zimmer and Patschke (1990) were the first to suggest that a class of pointing signs constitute determiners in ASL. McLaughlin (1997) enriches this claim by proposing the following system for ASL determiners.

(22) ASL determiner system (MacLaughlin 1997: 136)
definite: IX_{det}
indefinite: $SOMETHING/ONE_{det}$

Both determiners may appear alone as pronouns. They may also appear with a noun. In such cases, they always appear in the pre-nominal position. They are distinct from other similar-looking signs such as the adverb THERE and the quantifier ONE. Since there are overt markers for both definiteness and indefiniteness, the functional category of definiteness is assumed in ASL.

I turn to the last remaining functional category, tense. This dissertation assumes that there is no tense in the sense that there is no overt marking on the verb for past or present tense. The following ASL sentence is neutral between past and present in the absence of any context.

(23) JOHN WORK
'John works.'
'John worked.'

Traditionally, the future is understood to be the mirror opposite of the past if time is understood to be an unbounded, straight line. The future is expressed by the auxiliary 'will' in English and similarly by the sign WILL in ASL.

(24) a. John will work.
b. JOHN WILL WORK

Kamp and Reyle (1993) argue that the auxiliary *will* in English is a modal, both syntactically and semantically. For instance, it is interpreted semantically in sequence-of-tenses and relative clause contexts like a modal (Enç 1987, 1996). Cross-linguistically, the future form can behave either like a tense or like a modal. I will assume that WILL in ASL behaves like other modals (CAN, MUST) in both syntax and semantics, so that it is therefore not part of the tense system of ASL.

Neidle, Kegl, MacLaughlin, Bahan and Lee (2000) claim that ASL has a set of 'lexical tense markers.' While some of them are similar to time adverbials, NKMBL argue that such markers can be distinguished on the basis of articulation and syntactic distribution. The 'lexical tense markers' cannot vary in their articulation, while any corresponding adverbials may vary in their articulation to indicate the distance of a temporal point from the present. In addition, the 'lexical tense markers' appear only in one position, namely, between the subject and the verb phrase, and never appear in complement clauses of verbs that obligatorily subcategorize for tenseless complements (Aarons, Bahan, Neidle and Kegl 1995). I will not assume that these forms are tense markers for two reasons: (i) the distinction between them and locating temporal adverbials remains tenuous at best, and (ii) crucially, none of the forms are obligatory, as NKMBL note.

Since ASL does not have overt past or present tense morphology and since the status of future tense is debatable, I assume that ASL does not have a rich tense system.

1.4 Organization of the dissertation

The rest of the dissertation is organized as follows. Chapter 2 sets the stage by clarifying the set of aspectual morphemes that is assumed for ASL. Then the dissertation moves to the level of the sentence. Chapter 3 and Chapter 4 constitute the heart of the dissertation. Chapter 3 examines the first component of aspect, situation type, in ASL and seeks to understand how situation types are linguistically manifested in the language. Chapter 4 focuses on the other component, viewpoint aspect, and likewise investigates how it is manifested in the language. Chapter 5 completes the study of event structure in ASL by taking into account temporal interpretation at the level of discourse. Each of these chapters offers discussion of the relevant literature pertaining to the particular topic in ASL. Chapter 6 wraps up the dissertation with some generalizations about the cross-linguistic and cross-modal properties of event structure by surveying the literature on event structure in other signed languages.

Chapter 2: Aspectual Morphology

A morpheme encodes a one-to-one correspondence between a sound-image (or more generally, a form) and a concept, in the same sense that Saussure (1916) defines a sign. Bloomfield (1933) narrows down the meaning of a morpheme to a smallest meaningful phonological unit. That is, a morpheme cannot be analyzed into smaller phonological units that have meaning. In English, *-ing* is a morpheme. So are the verbs that *-ing* attaches to in the following examples.

(1) swimm-**ing**
study-**ing**
work-**ing**
teach-**ing**

This chapter seeks to clarify the set of morphemes that are assumed to exist in ASL and that contribute aspectual information. Chapter 1 outlines a key distinction between situation aspect and viewpoint aspect, which carries over to the morphemes. While situation aspect and viewpoint aspect relate to the situation conveyed by a clause, many morphemes related to aspect often appear on just one of the elements in the clause, namely, the verb. Once these morphemes are clarified in ASL, it becomes possible to proceed to the analysis of aspect at the level of the sentence.

Section 2.1 opens the chapter with a brief review of the literature that has proposed aspectual modulations for ASL. It also reviews previous attempts to group them. Section 2.2 explains how this chapter arrives at its assumptions regarding the set of aspectual morphemes that exist in ASL. Six aspectual morphemes are assumed to exist in ASL, which are outlined respectively in Sections 2.3 through 2.8: continuative, iterative, habitual, hold, conative, and FINISH. Finally, section 2.9 discusses remaining forms that

are not assumed to be grouped with these morphemes, and section 2.10 considers an ideophonic analysis of the aspectual morphemes.

2.1 Aspectual morphemes in ASL

Fischer (1973) was the first to note that several forms of reduplication in ASL mark aspectual distinctions, among other functions. The forms she observed foreshadow three of the aspectual morphemes that are ultimately proposed in this chapter: slow reduplication on a 'durative' verb elongates an event (= 'continuative'); slow reduplication on a 'non-durative' verb iterates an event (= 'iterative'); and fast reduplication carries 'habitual' meaning. In addition, Fischer and Gough (1972) note that a sign glossed as FINISH can have aspectual meaning.

Klima and Bellugi (1979) go beyond this starting point and propose a multitude of modulations in ASL that carry meaning closely related to aspect. Their definition of 'aspect' refers to different ways of viewing the "internal temporal consistency" of a situation, in contrast to tense, which locates a situation in time. They appeal to Hockett's (1958) idea of aspect as differing "contours" of events, since the contours sometimes are transparent in the movement of the arms and hands in the signs.

The following table is a complete list of the labels that Klima and Bellugi (1979) assigned to modulations in ASL with aspect-like meaning, along with their stated form and meaning.

(2) Klima and Bellugi's (1979) aspectual modulations

Modulation	Form	Meaning
Predispositional	large circular reduplication	prone to be, tend to be
Susceptative	single thrustlike movement	being in a state of susceptability to a quality
Continuative	slow reduplication	quality enduring over a prolonged span

Incessant	tiny, tense uneven iterated movement	rapid recurrence of a characteristic
Frequentative	marked steady regular beat	multiple occurrences of a quality, not closely spaced in time
Intensive	long tense hold at the beginning, very rapid single performance, and final hold	very
Approximative	lax handshape, extreme reduction in size and duration	sort of
Resultative	tense motion accelerating to long final hold	resulting in a complete change of state or quality
Iterative	reduplication	over and over again
Protractive	long tense hold at target location	duration in time, an uninterrupted state
Susceptative+ frequentative	brief thrustlike movement, reduplicated	is frequently susceptible to
Durational	smooth, circular reduplication	to do for a long time
Habitual	rapid, nontense repetition	to do regularly
Facilitative	elongated and fast movement	with ease
Inceptive	(none given)	start to
Augmentative	iterated movement along a line	more and more

Klima and Bellugi use the verb LOOK to illustrate some of the modulations. It has two basic forms, a “durative” form which has no path movement of the hands/arms in

its phonological form, and a "punctual" form which has path movement. See their figures (Klima and Bellugi 1979: 293). These two forms each combine with the inflected forms to yield various aspectual modulations.

The modulations are characterized by "dynamic qualities and manners of movement" such as reduplication, rate of signing, evenness of speed, tension, and pauses between cycles of reduplication. Since these properties are not used to make lexical distinctions in ASL, Klima and Bellugi raise the question of whether the modulations mark a grammatical element or whether they are merely "optional expressive suprasegmental nuances." They argue that these modulations are indeed morphological processes, since they exhibit "internal systematicity in their dimensions of patterning". This is seen by the fact that they may apply to nonce signs.

Klima and Bellugi offer two further arguments for the morphemic status of these modulations. They have a specific linguistic distribution, i.e. they appear only with certain predicates, and they appear in certain syntactic contexts. Second, they can be analyzed in terms of smaller phonological features that combine with one another: reduplication, even movement, tense movement, end-marking, fast movement, and elongated movement.

Some of the modulations proposed by Klima and Bellugi share similar meaning. In their terms, four of the modulations describe "states" (predispositional, continuative, protrative, intensive), and four others describe changes of states (susceptative/ frequentative, iterative, incessant, resultative). Thus one question is whether the modulations can be grouped into sets based on meaning.

There have been several attempts to regroup the modulations, starting with Klima and Bellugi themselves and including Baker-Shenk and Cokely (1980), Anderson (1982), Wilbur (1987, 2004), and Thompson (2001). The parallelisms in meaning and form among some of the modulations lead Klima and Bellugi to suggest that six of them represent three temporal aspects, as summarized in following table.

(3) Klima and Bellugi's (1979) proposed forms

	Durative (no path movement)	Punctual (path movement)
1st inflected form	protractive (uninterrupted)	incessant
2nd inflected form	durational	habitual
3rd inflected form	continuative (for long time)	iterative ('again and again')

Klima and Bellugi suggest that there are two forms of the verb, durative and punctual. The basic form of the durative verb itself has no path movement, and has no path movement either in the first inflected form; however, it has path movement in the 2nd and 3rd inflected forms. The basic form of the punctual verb and all of its inflected forms have path movement. Klima and Bellugi do not specify what the 1st, 2nd, and 3rd inflected forms are nor identify the basis of distinction between 'durative' and 'punctual'. They also do not clarify how the combinations of these two dimensions lead to the particular forms nor account for the other modulations within this schema.

Baker-Shenk and Cokely (1980: 404) present just four 'inflections for temporal aspect' and label them as follows: "over time" (continually, regularly, for a while); "regularly" (frequently, repeatedly, a lot, with active focus); "long time" (for a prolonged period of time); and "over and over again" (prolonged, repeated focus).

Another attempt to regroup the modulations is based on comparison with reduplication that marks aspect in Micronesian languages. Anderson (1982) first distinguishes between aspectual reduplication and intensive reduplication. Then, he suggests the following terms for some of Klima and Bellugi's modulations:

(4) Anderson's (1982) revised terminology for some of the modulations

Klima and Bellugi (1979)	Anderson (1982)
uninflected	(derived) stative
predispositional	continuous
frequentative	iterative punctual
continuative	perseverative durative

Anderson clarifies that not all aspectual modulations involve reduplication. He suggests the following phonological patterns for those modulations that do not use reduplication:

(5) Anderson's (1982) terminology for modulations without reduplication:
a. unmarked: normal movement
b. processive: slow, vibratory, plain
c. stative: end-hold
d. emphatic result-state: end-hold + tense becoming
e. change of state: holds beginning and end
f. change-in-steps

No formal definitions are offered for the labels above, nor criteria for distinguishing one form from another.

Wilbur (1987, 2004) represents another attempt to re-group the list of modulations proposed by Klima and Bellugi (1979). Wilbur (1987) suggests that five of the modulations represent formal aspectual marking: continuative, durational, incessant, habitual, and iterative. On the basis of similar meaning and phonological form, she pairs continuative and durational together, and incessant and habitual together. Finally, Wilbur suggests that four other modulations focus on the beginning or end of the event (inceptive, unrealized inceptive, resultative and unaccomplished).

In more recent work, Wilbur (2004) mentions only three aspectual forms, along with their meanings and labels. A curved line represents elongated time and is called 'durative' while reduplication of a short linear path indicates repeated events and is labelled 'habitual.' Removing pauses between each reduplication indicates 'incessant' aspect. Likewise, other researchers like Sandler (1989), Brentari (1998), and Liddell (2003), discuss a select few of these aspectual modulations and usually focus on characterizing the phonological form of these modulations, without considering how they fit into the overall system of aspectual morphemes.

2.2 Assumptions regarding the aspectual morphemes

This section clarifies the assumptions that the dissertation makes regarding the set of aspectual morphemes in ASL. At the beginning of the chapter, a morpheme was defined as a smallest meaningful unit. The previous section showed how Klima and Bellugi were able to demonstrate this for each modulation. Based on the definition of a morpheme, then, each of the modulations would be considered a morpheme.

There is another way to understand the notion of a morpheme that is illustrated by the English plural. In English, nouns can be pluralized in one of three ways. Some nouns add the suffix *-s* (or a phonological variant thereof, e.g., *-z* or *-es*); some have a zero marker; and yet others have exceptional forms.

(6)

	Singular	Plural
a.	cat	cat-**s**
	dog	dog-**s**
	house	house-**s**
b.	fish	fish-∅
	deer	deer-∅
	sheep	sheep-∅
c.	ox	ox-**en**
	child	child-**ren**
	man	m**e**n

If the exceptional forms are set aside, the *-s* suffix and the zero marker are two different forms that mark plural number. Both forms meet the above definition of a morpheme, so it is possible to say in principle that English has at least two morphemes that mark plural number. Alternatively, it is possible to group both forms under the label

'plural' and treat this label as a morpheme. The morpheme is then a morphosyntactic representation in the sense of Distributed Morphology (Halle and Marantz 1993). In this framework, the correspondence is between a morpheme and a list of 'vocabulary items.' For example, when a syntactic structure contains a plural noun, the morpheme for plural is inserted and is realized as one of several ways depending on the particular noun. Thus if the noun ends in a voiceless stop like *cat*, the plural morpheme is realized as *-s*. If the noun is *fish*, the plural morpheme is realized as a zero marker. Each way of realizing the plural morpheme is a vocabulary item.

(7) English plural morpheme

Morpheme		Vocabulary items
[plural]	<==>	[-∅] if noun is *fish*, *deer*, *sheep*, . . .
		[-s] elsewhere

The notion of a morpheme as a morphosyntactic representation has been used to account for many morphological phenomena in various languages, including the complex plural system in German (Spreng 2002). I use this notion to group the aspectual modulations in ASL for the purposes of this dissertation. The modulations would be grouped according to the semantic information they contribute. Specifically, in order to group any two modulations together, they must meet the semantic criterion that they share the same temporal schema. The individual modulations would be vocabulary items that are listed under a particular morpheme. Recall from Chapter 1 that eventualities are associated with temporal schemas giving their temporal properties. They also model the temporal relations of eventualities to one another, to other reference times, and to the deictic present. In this case, the temporal schemas show what changes the morpheme trigger in the temporal properties and relations of the eventualities.

On the basis of the criterion that they have the same temporal schema, six morphemes emerge: continuative, iterative, habitual, hold, conative and FINISH. They

are discussed in turn in the following sections. In each case, the particulars of the morpheme are spelled out, i.e. what modulations are grouped under the morpheme, what properties it has, and what it looks like generally on verbs. The semantic contribution of each morpheme is also spelled out and is assumed to be listed in the lexicon. The next two sections show that the first four morphemes pertain to situation type, while the last two relate to viewpoint aspect.

2.3 Continuative

The aspectual modulations labelled by Klima and Bellugi (1979) as 'protractive', 'durational' and 'continuative' are grouped here under a morpheme called 'continuative', since they all have to do with taking place over a period of time. Two of the forms mentioned by Baker-Shenk and Cokely (1980) describe two forms which correspond to Klima and Bellugi's continuative and durational respectively: "over time" which means "continually, regularly, for a while" and "long time" which means "for a prolonged period of time."

(8) Labels under 'continuative'

Continuative	quality enduring over a prolonged span
Protractive	duration in time, an uninterrupted state
Durational	to do for a long time

The continuative morpheme adds the meaning that the interval over which the eventuality unfolds is uninterrupted. To show that the interval is uninterrupted, the interval may be lengthened. Below is a partial list of verbs in ASL that take the continuative morpheme.

(9) ASL verbs that accept the continuative morpheme

WALK	STUDY	WORK
RUN	TEACH	CHAT
SWIM	LECTURE	REST
WORK-OUT	PARTY	CLEAN

The continuative morpheme is a bound morpheme, i.e. it cannot appear in isolation. The phonological form of the continuative morpheme usually consists of altering the movement of the verb root in such a way that it is extended for a longer time than in the citation form. Figure 17 shows the form for one verb.

Figure 17. STUDY+continuative

When set within a specific time frame, as specified by TODAY in the following example, there is a difference between the implied lengths of the intervals of Mary's cooking and John's cooking that is brought about by the continuative morpheme. In contrast, when the continuative form is absent, there is no such implication.

(10) a. TODAY, MARY COOK, JOHN COOK+continuative
'Today, Mary cooked, but John cooked even longer.'
*'Today, Mary cooked and John cooked (for the same length of time).'

b. TODAY, MARY COOK, JOHN COOK (TOO)
'Today, Mary cooked and John cooked (for any possible length of time).'

Similarly, the following two sentences have different meanings when STILL is added. The first sentence, which contains the continuative morpheme, has the episodic meaning that John is still cooking to this present moment, while the second sentence, which lacks the continuative morpheme, just indicates that John continues to cook in general.

(11) a. JOHN COOK+continuative STILL
'John is still cooking.'

b. JOHN STILL COOK
'John still cooks.'

As mentioned in Chapter 1 (section 1.4.3.1), the continuative morpheme may license an OV word order without topicalization (Liddell 1980, Fischer and Janis 1990, Matsuoka 1997, Braze 2004, and Chen-Pichler 2002), although Liddell, Braze and Chen-Pichler each note that the basic SVO word order is also possible with the morpheme.

The semantic contribution of the continuative morpheme is as follows.

(12) Continuative morpheme: the temporal interval over which the eventuality unfolds is longer than usual and uninterrupted.

The continuative morpheme is encountered in the next two chapters on situation aspect and viewpoint aspect.

2.4 Iterative

Three of the aspectual modulations mentioned by Klima and Bellugi (1979) are related to the concept of iteration. Their labels and meanings are listed below. Baker-

Shenk and Cokely (1980) mention an "over and over again" form which I take to be the same as Klima and Bellugi's iterative form.

(13) Labels under 'iterative'

Incessant	rapid recurrence of a characteristic
Frequentative	multiple occurrences of a quality, not closely spaced in time
Iterative	over and over again

Since they make semantic contributions that have the same temporal schema, they are grouped together under the morpheme 'iterative'. The iterative morpheme contributes the meaning that multiple instances of the eventuality unfold in their own interval. A break is possible between each interval. The following is a partial list of verbs that accept the iterative morpheme.

(14) Verbs that accept the iterative morpheme

COOK (SALMON)	EAT (APPLE)	TYPE (PAPER)
READ (BOOK)	LOOK-AT (FRIEND)	WRITE (PAPER)
BUILD (HOUSE)	BUY (CLOTHES)	SEND-OUT (INFO)
CLEAN (ROOM)	WIN (GAME)	PUBLISH (BOOK)

The phonological form of the iterative morpheme is manifested through reduplication of the movement of the verb root. Figure 18 shows the form for one verb.

Figure 18. STUDY+iterative

Since the iterative morpheme adds the meaning that an eventuality is repeated, the eventuality must be repeatable. That is, it must be bounded, or in other words, it must have initial and final endpoints. This is similar to what van Geenhoven (2004) has noted for the frequentative morpheme in West Greenlandic. Thus it is pragmatically odd to use the iterative morpheme with verbs that denote unrepeatable events, such as BORN or DIE, unless they are distributed over different arguments.

(15) a. JOHN COOK+iterative
'John cooked repeatedly.'

b. #JOHN DIE+iterative
'John died repeatedly.'

If the verb denotes an unrepeatable event and is distributed over different arguments, it is possible to use the iterative morpheme, provided that the bare subject noun phrase receives a plural reading. In contrast, if the iterative morpheme is not present, the bare subject noun phrase can be singular or plural.

(16) a. BOMB EXPLODE+iterative
'Bombs exploded repeatedly.'
* 'A bomb exploded repeatedly.'

b. BOMB EXPLODE
'Bombs exploded.'
'A bomb exploded.'

The semantic contribution of the iterative morpheme is summarized in the following.

(17) Iterative morpheme: multiple instances of the eventuality unfold in their own intervals.

The iterative morpheme is further discussed in Chapter 3 on coerced activities and again in Chapter 4 on imperfective viewpoint.

2.5 Habitual

Klima and Bellugi (1979) name four aspectual modulations below which describe a tendency or 'susceptibility' to do something. Given the close connection among the meanings, they are grouped together as 'habitual'. Baker-Shenk and Cokely's (1980) "regularly" form is assumed to be the same as Klima and Bellugi's habitual form.

(18) Labels under 'habitual'

Susceptative+	
frequentative	is frequently susceptible to
Predispositional	prone to be, tend to be
Susceptative	being in a state of susceptability to a quality
Habitual	to do regularly

Sentences with the habitual morpheme are generalizing or characterizing sentences (Krifka et al. 1995). Generalizing sentences are distinct from generic sentences. Generic sentences predicate a property of classes, whereas generalizing sentences may predicate a property of a class or an individual. Sentences with the habitual morpheme are generalizing sentences that predicate a property of an individual. These sentences are stative, since they depend for truth on a pattern of events involving an individual. Examples of verbs taking the habitual morpheme are presented below.

(19) Verbs that accept the habitual morpheme

GO

FLY

SMOKE

The habitual morpheme takes the phonological form of reduplicating the movement of the verb root, but in quicker and shorter cycles compared to the iterative morpheme. Figure 19 shows the form for one verb.

Figure 19. STUDY+habitual.

Even though there is a close relationship between the iterative and habitual morphemes with respect to form and meaning, they are distinct. The habitual morpheme has the meaning of 'usually' and expresses a pattern of events or states, not any particular situation, while the iterative morpheme expresses events or possible states that have sub-parts consisting of iterations of an event, like *He was knocking on the door*. Also, the habitual morpheme has smaller, faster movement than the iterative morpheme.[2]

Sentences with the habitual morpheme have several properties. First, the habitual morpheme cannot be used to describe a particular situation. This property sets it apart from the iterative morpheme.

[2] It is possible that the habitual morpheme is diachronically derived from the iterative morpheme. The 'susceptative+frequentative' modulation appears to be a candidate for an intermediary stage between the iterative and habitual morphemes.

(20) a. JOHN GO+habitual CHURCH
* 'John went to church.'
'John goes to church (regularly).'
'John usually goes to church.'

b. JOHN GO CHURCH
'John went to church.'
? 'John goes to church.'

In addition, sentences with the habitual morpheme cannot be followed by a clause that indicates how long the event took, since they do not describe episodic events.

(21) a. #JOHN GO+habitual CHURCH. NEED ONE-YEAR.
'John went to church regularly. It took him one year.'

b. JOHN GO CHURCH. NEED ONE-HOUR.
'John went to church. It took (him) one hour.'

Finally, since all sentences with the habitual morpheme are stative, the habitual morpheme does not appear with verb constellations that are already stative. This is discussed in detail in Chapter 3, section 3.8.2 on coerced states.[3]

(22) a. * I KNOW+habitual HISTORY
'I know history regularly.'

[3] The habitual morpheme is thus different from the imperfective in Romance languages where the verb know can only appear with imperfective morphology. Chapter 4, section 4.2.3, presents further arguments that the habitual morpheme is not an imperfective morpheme.

b. I KNOW HISTORY
'I know history.'

The habitual morpheme makes the following semantic contribution. Note that unlike the semantic contribution of the iterative morpheme, the semantic contribution of the habitual morpheme does not assume that there is an end to the repetition of the eventualities.

(23) Habitual morpheme: there is a property that is characterized by a regular repetition of the eventualities and that holds over an interval of time.

2.6 Hold

Jones (1978) mentions an 'incomplete aspect' while Brentari (1998) describes a 'punctual marker' and Wilbur and Wood (2000) similarly label a form as a telicity marker. All three involve adding a final endpoint to an event. These are suggested to be grouped together as 'hold.'

(24) Labels under 'hold'

Incomplete	Jones (1978)
Punctual	Brentari (1998)
Telicity marker	Wilbur and Wood (2000)

This morpheme appears frequently with verbs that use signing space to show motion. It means that the event is interrupted or terminated, without any implication about its completion. An example follows.

(25) BOAT VEHICLE-CL+MOVE+hold(final)
'A boat was moving along and came to a stop.'

The hold morpheme takes the phonological form of freezing the final configuration of the sign and does not involve any wiggling. Figure 20 illustrates the form for the verb STUDY.

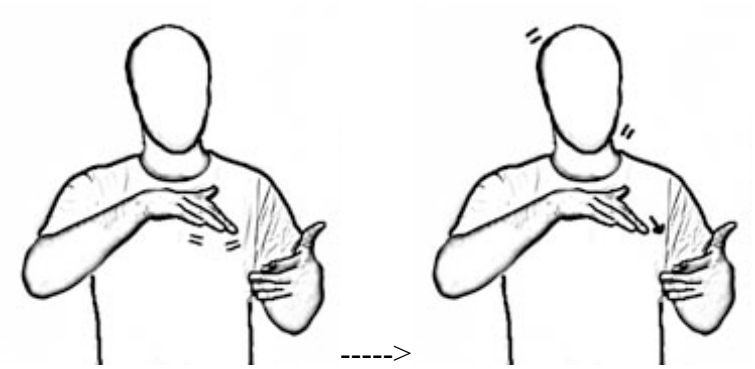


Figure 20. STUDY+hold

A verb denoting an activity does not have an inherent final endpoint. One property of an activity is that if it is happening, then it has happened (cf. *John is running* entails *John has run*). The hold functions to add a final endpoint to the event. The semantic contribution of the hold morpheme is given below.

(26) Hold morpheme: there is a final endpoint to the duration of an eventuality.

The discussion of this morpheme is elaborated in section 3.8.4, which argues that it adds a final endpoint to events with duration (activities), thus coercing accomplishments.

2.7 Conative

Klima and Bellugi (1979) discuss two more aspectual modulations labelled ‘inceptive’ and ‘resultative’. Their meaning are repeated below. In addition, three other researchers, listed below, have suggested aspectual morphemes whose meanings are similar. Following the list are examples of verbs that take the morpheme.

(27) Labels under ‘conative’

Inceptive	start to
Resultative	resulting in a complete change of state or quality
Delayed completive	at last (Brentari 1998, Valli and Lucas 1995)
Unaccomplished	unfinished in present (Jones 1978)
Unrealized inceptive	was going to ..., but ... (Liddell 1984, 2003)

(28) a. Examples from Brentari (1998: 196) for ‘delayed completive’

RUN-OUT-OF	ADMIT
ZOOM-OFF	PASS
UNDERSTAND	FOCUS
DEFLATE	

b. Examples from Liddell (1984: 262) for ‘unrealized inceptive’

INFORM	PUT-IN-OVEN
TELL	WASH-DISHES
ASK	WRITE
YELL	

The phonological form involves holding the initial configuration of the hands and arms in place during the articulation of the verb. Figure 21 shows the form for STUDY.

Figure 21. STUDY+conative

Brentari (1998) provides the meaning of 'delayed completive' as 'delay the completion of X.' In an earlier paper (Brentari 1996), the term 'protracted inceptive' is originally used, and the meaning given is 'perform the onset of X for a long time.' For example, when the morpheme appears with RUN-OUT-OF, the meaning is that it took a long time before something finally ran out. This could be used in a context where there is a large stack of papers in the copying room, and it took a long time before the stock finally ran out, and only then could more stock be ordered. The morpheme does not require the verb to be volitional. It can be used with a verb that denotes an agentless event, as in 'it took some time for the paper to run out' or 'people kept waiting for the paper to run out' or 'the paper was just about to run out.'

Liddell (1984: 262) gives a context for the use of the 'unrealized inceptive': "a signer might say that all the papers were carefully arranged on the desk, plenty of pens or pencils were ready, friends had gone out so that there would be no interruptions, there was coffee to drink. All the conditions for a productive writing session were met. Then just as (subject) was *about to begin* writing, something came up (an interruption, a just remembered commitment, a memory lapse, etc.)." The italicized phrase *about to begin* conveys the meaning of the morpheme.

Anderson (1982: 101), following Klima and Bellugi (1979), describes a 'tense punctual resultative' which involves an "end-hold and tense becoming." This appears to be the same as what Klima and Bellugi have called "resultative" and is accordingly analyzed as an instance of the conative morpheme.

Jones (1978) describes an 'unaccomplished aspect' in ASL, notated as UA in the glosses below, which can be phonologically manifested in one of four ways depending on the verb. His description of the movement is provided for each manifestation.

(29) Jones' (1978: 74-5) unaccomplished aspect in ASL

a. "cutting the movement short"

MY P-E-T CAT DIE+UA

'My pet cat is in the process of dying.'

b. “retracting the movement”
BOY GET-OUT+UA CAR
‘The boy began [attempted] to get out of the car.’

c. “making a ‘false start’”
FINISH+UA MY HOMEWORK
‘I am trying to finish my homework.’

d. “the movement overextending its target”
BOY HIT+UA GIRL
‘The boy attempted to hit the girl.’

The descriptions of the movements for each of the first three manifestations fit the form for the conative morpheme: they involve holding the initial configuration of the hands. Depending on the verb, ‘holding’ the initial configuration can mean ‘cutting the movement short’ or ‘retracting the movement’ or ‘making a false start.’ Moreover, the meanings of the first three manifestations are similar to that for the conative morpheme: there is a focus on the preliminary stages of the event. These three manifestations are then proposed to be instances of the conative morpheme. On the other hand, the fourth manifestation has a different form and meaning: the articulation of the sign is complete but modified in such a way the goal is missed; the meaning is then closer to ‘The boy missed hitting the girl by this much.’ I consider this as adverbial modification meaning ‘unsuccessfully’ rather than an instance of the conative morpheme; the conative morpheme itself does not indicate whether the event culminates successfully or not.

Chapter 4 argues that all of these forms except for the fourth manifestation mentioned above are variants of the morpheme ‘conative’. The conative morpheme is distinct from the hold morpheme and functions to push forward the initial endpoint of the verb later than would normally be expected. The ultimate meaning depends on what the

next verb is. If the next verb is the same as the previous verb (but without the conative morpheme), it means there was a delay before the event was finally carried out. If the following verb is different than the previous verb, the meaning is that the event could not carried out. The semantic contribution of the conative morpheme is summarized in the following.

(30) Conative morpheme: there is an attempt for the eventuality to be carried out.

2.8 FINISH

Fischer and Gough (1972) note the multiple functions of a sign glossed as FINISH: as a main verb, as an adjective, as an auxiliary, as a marker for perfective action but not for tense, as a conjunction, and as an idiomatic expression meaning 'that's all' or 'enough!' In spite of the gloss, then, it does not only mean 'to finish,' which is standardly expressed by another sign glossed as COMPLETE. Friedman (1975) further defends the view that FINISH is a perfective marker along with NOT-YET, the former sign being a 'positive' perfective marker and the latter a 'negative' one. The phonological form of FINISH is shown in the following figure.

Figure 22. FINISH

Fischer and Gough observe that it appears before the verb or at the end of the sentence, depending on its function.

(31) a. JOHN CLEAN ROOM **FINISH**
'John cleaned the room.'

b. JOHN **FINISH** CLEAN ROOM
'John cleaned the room.'
'John has cleaned the room.'

Sometimes the sign is cliticized to the end of verbs like SEE and READ. They also notice that when FINISH appears at the end of a sentence, it is usually followed by another sentence, as in the example YOU EAT FINISH, WE GO SHOPPING 'after you have eaten, we will go shopping.' Such data led Janzen (2003) to suggest that clause-final FINISH has been grammaticized first as a completive aspect marker from the main verb and then as a conjunction that roughly means "and then".

In agreement with Friedman (1975), I will argue that FINISH functions as an aspectual viewpoint morpheme to present a bounded view of an event. Without FINISH, an event could be open. In Chapter 4, the analysis of FINISH is elaborated.

(32) FINISH: the eventuality is bounded, i.e. the entire eventuality is visible.

2.9 Forms not included under aspectual morphemes

Klima and Bellugi (1979) discuss several more modulations that are not included under the above aspectual morphemes. They can be split into two broad categories: adverbial modification and distributional quantification. By assuming that these modulations are separate from the rest of the modulations, the set of aspectual morphemes in ASL is further delimited.

2.9.1 Adverbial modification

Klima and Bellugi (1979) note that they interpret the term 'aspect' broadly to refer to several distinctions: recurrence/duration, temporal focus ('start to', 'increasingly',

'resulting in'), manner ('with ease', 'readily'), and degree ('a little bit of', 'sort of', and 'very'). All of the modulations that they have grouped with 'recurrence/duration' or 'temporal focus' have been grouped with the aspectual morphemes above. Here are the other modulations which are associated with 'manner' and 'degree'.

(33) Modulations that function as adverbs of manner and degree

Intensive	'very'
Approximative	'sort of'
Facilitative	'with ease'
Augmentative	'more and more'

As Wilbur (1987) points out, modulations having to do with manner and degree 'comment' on the activity. These modulations do not necessarily reveal the internal temporal structure of the event nor present a particular viewpoint on the event. Rather, they add optional information by modifying the event in some way. In particular, they indicate the manner or degree in which the event is carried out. They are comparable to English manner and degree adverbs.

(34) a. Manner adverbs
quickly
slowly
easily

b. Degree adverbs
intensively
hardly
barely

The manner adverbs *quickly* and *slowly* describe the rate at which an event unfolds, while *easily* indicates the ease with which an agent carries out an event. Similarly, degree adverbs like *intensively* and *hardly* show the extent to which an event has unfolded.

The modulations, which occur by changing the movement of the sign in some way, are also comparable to the nonmanual adverbs of manner that appear in ASL, like those notated as 'mm' and 'th' (Baker-Shenk and Cokely 1980). The 'mm' adverb presses the lips together during the articulation of a sign, while the 'th' adverb protrudes the tongue through the lips. Here, they are translated as 'regularly' and 'carelessly' respectively. Liddell (1980) argues that these are adverbs of manner and degree, because they can be questioned and negated. They co-occur with adverbs in addition to verbs. The same is true for the above modulations: they can be questioned or negated and can co-occur with other aspectual morphemes like the continuative.

2.9.2 Distributional quantification

In addition to the modulations discussed above, Klima and Bellugi (1979) mention another set of modulations that express "distributional aspect". Seven kinds of forms fall under this rubric. They are listed below along with their meanings.

(35) Distributional aspect (Klima and Bellugi 1979)

Inflection	Meaning
exhaustive	distributed to individuals in group in one event
allocative determinate	distributed to specific individuals at different times
allocative indeterminate	distributed to unspecified individuals at different times
apportionative external	distributed around members in closed group
apportionative internal	distributed all over, within a single whole
seriated external	distributed over series of objects in same general class
seriated internal	actions distributed with respect to internal features of object

The various inflections differentiate actions according to one of four factors, in Klima and Bellugi's (1979: 284) terms: "(a) whether a specific act presents itself as an indivisible whole or as several separate actions; (b) whether the actions are specified for occurrence at distinct points in time; (c) whether the actions are specified for order of occurrence; and (d) how the actions are distributed with respect to individuals."

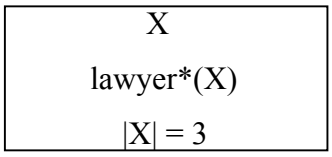
The phonological forms for distributional aspect, like those for some aspectual morphemes seen above, involve stem-internal change. They alter the shape of the movement of the arms/hands (point, line, arc, circle) as well as the number of repeated movements. They affect the handedness of the sign (i.e. whether one or two hands are used) and whether the movement alternates between the two hands, if the form is two-handed. They may change the plane that the articulation of the inflected verb occurs in, i.e. the horizontal plane or the vertical plane.

All of these inflections are "partly a matter of choice and focus", i.e. they are optional. Klima and Bellugi note two important differences between distributional aspect and the other aspectual modulations discussed earlier, which they call "temporal aspect." First, the earlier aspectual modulations "specify only temporal distribution without regard to the number of agent/recipients or actions." Second, distributional aspect uses spatial patterning such as displacement in signing space, while the earlier aspectual modulations use temporal patterning, such reduplication and tension.

The meanings given for distributional aspect resemble "distributive" readings, in contrast to "collective" readings (Kamp and Reyle 1993). As an example, the English sentence *Three lawyers hired a new secretary* is ambiguous between a collective and a distributive reading. On the collective reading, the three lawyers as a group hired a total of one secretary. On the distributive reading, each of the three lawyers hired his or her own secretary, for a total of three. Kamp and Reyle analyze the collective reading as introducing a discourse referent that represents a set, and the distributive reading as a process (called the distributive expansion) that converts this set into individuals, as schematized below.

(36) Three lawyers hired a secretary.

Collective reading:



X hired a new secretary

Distributive reading:

Via distributive expansion of *X hired a new secretary*:

For every x ∈ X, x hired a new secretary

(Kamp and Reyle 1993: 327)

Distributional aspect in ASL then involves distributive expansion on a plural noun phrase, and the different forms of distributional aspect depend on the type of plural noun phrase. For instance, in the 'seriated external' form the relevant plural noun phrase refers to a set of objects in the same general class, while in the 'seriated internal' form, the plural noun phrase refers to a set of properties within an entity. Thus distributional aspect has a quantificational function, and is not grouped with one of the aspectual morphemes.

2.10 Ideophones

All of the aspectual morphemes proposed above are taken to be inflectional. Yet Liddell (2003: 52) questions the inflectional status of some aspectual modulations in ASL. He raises the possibility that the aspectual modulations represent a kind of morphology that is different than inflection and derivation. This kind could be ideophones, as suggested by Bergman and Dahl (1994) for the corresponding modulations in Swedish Sign Language (SSL).

According to Bergman and Dahl, ideophones constitute a class of words with peculiar phonological, grammatical and semantic properties and tend to be onomatopoeic. They expand a sentence with a 'normal' verb by expressing 'concrete, mainly perceptual,

properties of a situation'. They are often accompanied by a reduplicated manual gesture, as in Igbo. Speakers find it hard to give paraphrases and prefer to use another gesture to express the meaning of the ideophone. They tend to appear in narratives.

The main argument for an ideophonic view of the modulations is the parallelism in form and meaning between these modulations and the "expressives" in Kammu, a language spoken in Laos. The expressives are unique for their "iconic and connotative meaning rather than symbolic and denotative" meaning, and are regarded as adverbial. There are nine process in all which involve a mix of affixation and reduplication. For instance, simple reduplication (R+R) indicates ongoing action in general, while R+kn-R denotes a single instance of ongoing action and R+ng-R means plural instances of ongoing action (Svantesson 1994).

Similarly, SLL uses fast reduplication in large, almost circular movements to indicate 'be verbing' or 'verb for a while'. This form resembles the iterative morpheme in ASL as discussed above. In addition, SSL uses slow reduplication, involving smooth short movements, to indicate 'verb for a long time'. This corresponds to the continuative form in ASL.

Bergman and Dahl take the expressives in Kammu to constitute an autonomous system of ideophones that have a certain degree of iconicity. Similarly, the "gestural-visual character [of SSL and other sign languages] favors iconic or quasi-iconic processes like reduplication" to express similar ideophonic meanings. They argue that the system of reduplication should be treated as grammatical component of its own, just like the Kammu expressives. One point in favor of this conclusion is that it is hard to negate ideophones. Reduplication in sign language is also difficult to negate.

An ideophonic system suggests that there is no one-to-one correspondence between a morpheme and a grammatical meaning. On the contrary, the previous sections taken together suggest that the morphemes using reduplication (i.e. continuative, iterative and habitual; the other morphemes do not use reduplication) have complementary distribution. That is, the morphemes appear in linguistic environments that are exclusive of one another. In other words, it is not possible for them to co-occur in the same

sentence. The complementary distribution among the morphemes shows that it is possible to identify morphemes that have distinct grammatical meaning. For this reason, an ideophonic analysis is not adopted for the morphemes.

While an ideophonic analysis is not adopted synchronically, it is possible that the aspectual morphemes involving reduplication are originally rooted in ideophones. They can be grammaticized from ideophones, just as other grammatical elements in ASL have been grammaticized from (iconic) gesture, as suggested by Shaffer (2000) for modals and by Janzen (1998) for topic marking, both of which are summarized in Janzen and Shaffer (2002). At the same time, grammaticization can allow these aspectual morphemes to preserve their iconic mappings in the sense of Wilcox (2004: 129).

2.11 Summary

In sum, six aspectual morphemes in all are assumed for ASL: continuative, iterative, habitual, hold, conative and FINISH. The first four involve situation type - the internal temporal structure of a situation; the last two are aspectual viewpoint morphemes. The remaining modulations that are not grouped with one of these six morphemes involve either adverbial modification or distributive quantification.

The differences among the six aspectual morphemes can be understood as follows. On the lexical level, the continuative morpheme extends the duration of the event; the iterative morpheme pluralizes an event; the habitual morpheme generalizes an event; the hold contributes a final endpoint to the event; the conative morpheme pushes forward the initial boundary of the event; and FINISH presents the event in its entirety. On the semantic level, the first four morphemes contribute to situation type, and the latter two morphemes fall under the component of viewpoint aspect. They receive further treatment in the next two chapters.

Chapter 3: Situation Aspect

3.1 Introduction

As defined in Chapter 1, situation type concerns the intrinsic temporal properties of an eventuality (Smith 1997). Situation types include Vendler's (1967) classic typology of eventualities, and Smith proposes adding semelfactives to the typology. Below are ASL examples for each situation type.

(1) States: KNOW, LIKE
Activities: STUDY, EXPLAIN
Semelfactives: COUGH, KNOCK
Achievements: ARRIVE, PASS TEST
Accomplishments: FILL-OUT FORM, BUILD HOUSE

This section introduces fundamental issues pertaining to these situation types in current research and clarifies the assumptions adopted throughout the chapter, thus setting a point of departure for the research questions to be examined here.

3.1.1 Situation type as covert linguistic categories

Here, two key questions are considered regarding situation type: to what entity does situation type belong and how is situation type defined?

Aspectual classes as properties of events vs. linguistic properties. There are properties of states and events in the real world which form the basis of conceptual categories that are universally available to humans. One main issue concerns the relationship between these conceptual categories and the situation types listed above. There have been two complementary views about this relationship. On one view, there is a one-to-one correspondence between them, i.e. situation types directly reflect the conceptual categories (Bach 1981, Parsons 1990). On the other view, while situation

types are rooted in conceptual categories, they constitute covert linguistic categories, the expression of which may be language-specific (Vendler 1967, Comrie 1976, Dowty 1979 and Smith 1991, among others). The latter view is assumed here, since it is consistent with the findings presented in this chapter, many of which are specific to ASL.

Situation types as properties of verb constellations. Assuming that situation type is a linguistic category, the next question is what linguistic element it belongs to. There are several possibilities. One possibility is that situation types are properties of verbal heads, i.e. they are lexical classes, while the feature of telicity is a property of the verbal phrase (Rothstein 2004). Another possibility is that the feature of telicity heads its own functional projection (AspP) and thus receives a syntactic treatment (Borer 2005). Yet another possibility is that they are properties of the verbal phrase (Dowty 1979 and Verkuyl 1993). One last possibility is that they belong to the verb constellation (Smith 1997). A verb constellation includes, at the minimum, the verb itself and its arguments. The verb constellation may roughly correspond to the verbal phrase if the subject is assumed to be inside the verbal phrase according to the VP-internal subject hypothesis. It may also roughly correspond to a sentence, minus grammatical information like tense and optional elements like adverbs. For the purpose of this chapter, Smith's assumption that situation types are associated with verb constellations is adopted, since Dowty gives examples showing that the entire verb constellation is relevant. Situation type turns out to depend not only on the verb but also on the properties of the arguments that appear with the verb. Situation type is in fact compositional: features of the verbs and its arguments are composed to arrive at a clausal interpretation. The composition is semantic, not syntactic, and the rules for composition depend on descriptive generalizations regarding the meanings of sentences in each language.

Defining verb classes in terms of sets vs. features. Taking situation types to be properties of verb constellations, there are two ways to define them. One way is to define the situation types in terms of sets (e.g. Bach 1981, Pustejovsky 1995). For instance, Bach (1981) classifies situations or 'eventualities' in his terms into states and non-states. Non-states are divided into processes (roughly corresponding to Activities) and events.

Events are then subdivided into protracted events (= Accomplishments) and momentaneous events. Momentaneous events are split into happenings (= Semelfactives) and culminations (Achievements). This approach assumes a hierarchical relationship between the situation types. An advantage of the approach is that simpler rules can be formulated that refer to sets instead of listing the individual situation types subject to the rule.

Another way takes a featural approach, like Smith (1997) and Rothstein (2004). Each situation type is defined as a cluster of two or three binary features. For instance, in Smith's framework, states are defined as the cluster of features [+Dynamic, -Durative, -Telic]. A plus symbol (+) indicates that the feature is present, while a minus symbol (-) signifies the absence of a feature. Each situation type has different values for these features.

While the two approaches can be translated into each other, a featural approach to situation types is assumed here for two reasons. First, features straightforwardly explain the number of situation types that exist, and second, they easily predict which types of shifts from one situation type to another are most likely, as will be seen in section 3.8.

Features for defining situation types. There are several ways to implement a featural approach, depending on the number of features and the nature of the features themselves.

Smith (1997) proposes three temporal features: dynamism, duration (which corresponds closely to Rothstein's 'stages') and telicity. Dynamism makes the fundamental distinction between states and events, while the other two features further differentiate events into four more situation types. Duration groups Activities and Accomplishments together, apart from Semelfactives and Achievements. Telicity groups Achievements and Accomplishments apart from Activities and Semelfactives. This featural approach is used in this chapter and is elaborated further in the next section.

Another approach assumes two features, one verbal and one nominal (Verkuyl 1989). The verbal feature [±ADD-ON for the ability to 'add on' an argument] corresponds to dynamism, and the nominal feature [±SQA, for 'specified quantity'] to

telicity. Their combination leads to three classes. When verbs are non-dynamic, the situation type is a State, no matter what the nominal feature is. When verbs are dynamic and nouns do not have a specified quantity, they form an atelic verb phrase (= Activity and Semelfactive). When the nouns have a specified quantity, the verb phrase is telic (=Achievement and Accomplishment). This approach does not distinguish Activities from Semelfactives, nor Achievement from Accomplishments. Since there are linguistic correlates in ASL which distinguish these situation types from one another, Verkuyl's approach is not pursued here.

A third approach (Rothstein 2004) also assumes two features. One corresponds roughly to duration [± stages]; the other is telicity [± telic]. These features group the situation types differently, and all possible combinations are used, so that there are four situation types: States [-stages, -telic], Activities [+stages, - telic], Achievements [-stages, +telic] and Accomplishments [+stages, +telic]. While this approach separates achievements from accomplishments unlike Verkuyl (1989), it still subsumes semelfactives under activities. There are linguistic correlates in ASL which distinguish them. Smith (1997) uses a third feature to cover all five situation types, unlike Rothstein. There is sufficient motivation for the increased number of features, since one feature (dynamism) makes a broad distinction between states and events, and the two other features (duration and telicity) capture all four types of events.

3.1.2 Cross-linguistic variation with respect to the manifestation of situation types

As assumed above, situation types are covert linguistic categories. The notion of 'covert category' is due to Whorf (1956). He noted that certain linguistic features have distributional correlates which are implicitly followed by speakers of the language, e.g. gender in English. Such covert categories are part of the speaker's knowledge of the language. The temporal features of situation types are then detected through distributional correlates, i.e. specific patterns in the presence of other linguistic elements. To establish a pattern, there must be some kind of systematic contrast, and the purpose of diagnostic tests is to reveal those contrasts. Thus linguistic correlates do not need to be particular

morphemes or constructions; rather they can be distributional properties. Since the linguistic correlates can be language-specific, the next question is whether there is cross-linguistic variation in the manifestation of situation types.

While much of the literature on situation aspect is based on English, there is extensive literature which explores situation aspect in other languages. The cross-linguistic work reveals three ways that languages vary in their manifestation of situation types.

One is the number of situation types that are manifested. Smith (1997), in examining situation types in French, Russian, Mandarin Chinese, and Navajo finds that the first three languages manifest all five situation types like English, whereas Navajo does not use the telic distinction and distinguishes only three situation types at the linguistic level: States, Durative events (which collapses activities and accomplishments) and Instantaneous events (which collapses semelfactives and achievements).

There is also cross-linguistic variation with respect to the properties of a situation type. Based on much work in English and other languages, accomplishments are defined in terms of a telic feature and have culmination implicatures that cannot be cancelled . Matthewson, Bar-el, and Davis (2004), in their study of aspect in Statimcets and Squamish, suggest that these languages allow the culmination implicatures of accomplishments to be cancelled in certain cases.

Then, while situation types and their temporal features do not vary across languages, their membership and linguistic correlates do. Some correlates are common across languages, and others are language-specific. For instance, some of the linguistic correlates of an Achievement appear in both French and English: incompatibility with expressions of duration and compatibility with some forms of completion. Other correlates of the Achievement are specific to the language, e.g. having a habitual stative interpretation in present perfective sentences in English but not necessarily in French (Smith 1997).

3.1.3 Situation type in ASL

The cross-linguistic variation in the expression of situation types raises the question of how they are manifested in ASL. The language holds not only cross-linguistic interest but also cross-modal interest. ASL occurs in a visual-gestural modality. Thus a second, related question is whether there are any properties of situation types in sign languages that do not appear in spoken languages.

To date, there has been one study of situation types in ASL: Wilbur (2004). This study seeks to identify properties of situation types in ASL and has found linguistic correlates for situation types on the phonological level. That is, one set of situation types share a phonological property in common, while another set has another phonological property in common.

ASL signs denoting Transitions (following the terminology of Pustejovesky 1995, roughly the set of telic predicates, i.e. achievements and accomplishments) share the phonological property that there is a change in some phonological parameter of the sign. Recall from Chapter 1 that there are four phonological parameters that constitute a sign: handshape, orientation, location and movement. Signs in this set involve a change in one of these parameters. Thus signs GUESS and SEND involve a change in handshape; GIVE-UP, COME-ON, HAPPEN, and START are formed through a change in orientation; and SHOW-AROUND, READ-THROUGH, and POSTPONE are made through a change of location. The signs are HIT and ARRIVE also involve a change of location except that the final location is contact with some part of the body. Moreover, Wilbur notes that for the last two signs, either contact with the final location or the movement toward the final location may be "foregrounded." That is, if the completion of the event is under focus, the movement is minimal, but if the process is under focus, the movement is elongated.

On the other hand, ASL signs for Processes (i.e. the set of atelic predicates, or activities and semelfactives) share a different phonological property. They all have path movement or "movement over a line". They do not involve a change in handshape or orientation. In the words of Supalla and Newport (1978), the movement is "continuous",

i.e. it is uninterrupted, smooth and loose. Wilbur's examples for Processes are RUN, READ, and PLAY.

Wilbur has then uncovered motivated mappings between phonological form and situation type. As conceded in the previous chapter (section 2.10), the iconic roots of grammatical elements in signed languages may remain visible. This chapter concentrates on how linguistic correlates of situation type are manifested in signed languages on the morphological, syntactic, semantic and pragmatic levels. Once systematic linguistic correlates are identified at all of these levels, it becomes possible to establish the particular situation types that are linguistically manifested. Thus the following research questions are pursued here:

(i) what situation types are manifested in ASL?
(ii) what are the linguistic correlates of situation types in ASL on the morphological, syntactic, semantic and pragmatic levels, if such correlates exist?

3.1.4 Structure of chapter

To address these questions, the chapter starts with an introduction to the three aspectual features that underlie situation types, namely dynamism, duration and telicity. Next is a section for each situation type which outlines its basic properties, its temporal schema, and its linguistic correlates. Since linguistic correlates for situation type vary from language to language, the diagnostic tests for each situation type must be developed independently for each language, according to the contrasts in that language. Accordingly, diagnostic tests are developed for each situation type in ASL that depend on contrasts specific to the language. These tests are independent of diagnostic tests developed for other languages. After discussing each situation type, the chapter turns to coercion, a mechanism that shifts one situation type to another through combination with various linguistic elements. The chapter closes with a summary and conclusion regarding situation types in ASL and in languages in general.

3.2 Aspectual features of situation types

This section, based on Smith (1997), provides further background on the three aspectual features that distinguish the different situation types and that are adopted here in order to describe situation types in ASL. The features are dynamism, duration and telicity.

3.2.1 Dynamism

The first aspectual feature, *dynamism,* distinguishes states from events. Events "require a continual input of energy if they are not to come to an end" (Comrie 1976: 13). This can be seen through the presence of an agent, although an agent is not necessary for a situation to be dynamic: states do not have them, while events usually do. The term implies change, or something happening. Thus sentences like those in (2) are dynamic, while those in (3) are not.

(2) Dynamic sentences

a. John is walking in the park.

b. John built a house.

c. John won the contest.

(3) Non-dynamic (= stative) sentences

a. John knows history.

b. John is from Texas.

c. John lives in Boston.

Linguistic correlates of dynamism are helpful in determining whether a sentence describes a State as opposed to an Event. I now focus on Events. The remaining two features distinguish four types of Events.

3.2.2 Duration

The second feature, *duration*, reflects the property of taking place over a period of time. Formally, it indicates the presence of internal stages. It distinguishes between activities and accomplishments on the one hand, which have this feature, and semelfactives and achievements, which lack this feature.

(4) Durative sentences

a. John walked in the park for 2 hours.

b. John cooked dinner for 2 hours.

(5) Non-durative sentences

a. ? John knocked once on the door for two hours.

b. ? John won the contest for two hours.

3.2.3 Telicity

The last aspectual feature is *telicity*. The term is originally due to Garey (1957). For the purpose of this chapter, it crucially involves a goal, a change of state, or an intrinsic bound. Telicity distinguishes the set of accomplishments and achievements which have this feature, from the set of activities and semelfactives. While telic events are intrinsically bounded by their very nature and imply completion, completion is not necessarily entailed.

(6) Telic sentences

a. John won the contest.

b. John cooked dinner.

(7) Atelic sentences

a. John ran in the park.

b. John knocked on the door once.

These three features combine to create clusters that define situation types. The following table summarizes the clusters of features that are associated with each situation type, each of which I turn to in turn.

(8)

	Dynamism	Duration	Telicity
States	-	n/a	n/a
Events			
Activities	+	+	-
Semelfactives	+	-	-
Achievements	+	-	+
Accomplishments	+	+	+

3.3 States

3.3.1 Introduction

States are situations that do not change, either at a moment or over an interval. The change into or out of a state is not part of the state itself.

There are two kinds of states, individual-level and stage-level (Carlson 1977). Individual-level states refer to properties that are lasting. In the examples below, the predicates ascribe a permanent property to the subject. The property holds over time. While it is possible for the property to no longer hold after some point, e.g. John can stop enjoying walking at nighttime after being mugged or Mary can lose her knowledge of French after experiencing a brain injury, these changes are not part of the state. Rather, what is relevant is that the property holds constantly throughout a stretch of time.

(9) a. Sue is tall.

b. John enjoys walking at nighttime.

c. Mary knows French.

States also include episodic statives, where the predicate does not necessarily describe a permanent property of the subject, but describes a situation that remains unchanged for the subject. The predicate then can be stage-level, describing a property of the subject in a particular stage (or in a time-slice). There are many examples of 'temporary' states. Kratzer (1995) analyzes stage-level predicates as having a Davidsonian event argument, which individual-level predicates do not have. (Cf. Kamp and Keyle 1993 who analyze all eventualities as having a Davidsonian argument).

(10) a. Simba is here/in the cage.
b. The lion is in the cage next to the tiger.
c. John is ready/happy/angry.
d. He believes in ghosts.

Individual-level states have the feature [-dynamic]. In the following informal temporal schema for states, dashes indicate undifferentiated periods of states while I and F stand for initial and final endpoints respectively, which are not included in the state but are there optionally, as indicated by the parentheses. For example, knowing history does not have to have a specific starting point nor an endpoint. The period during which one knows history is undifferentiated - that is, no matter how the period is divided up into smaller sub-periods, the state of knowing history remains. Stage-level states are not dynamic either and have a Davidsonian event argument that can be modified by durative adverb, for example.

(11) a. Temporal schema:
(I) ------ (F)

b. Examples:
KNOW HISTORY 'know history'
LIKE CHOCOLATE 'like chocolate'

3.3.2 Tests

There are three tests for individual-level states. The first test is that individual-level states are not compatible with imperatives, because imperatives imply the presence of an agent and therefore dynamism, which is missing in individual-level states.

Even though there is no overt morpheme that is affixed to the imperative form of the verb root, the imperative form is signed with slightly more force at the level of prosody, and the meaning is brought out more clearly in the context of GO-AHEAD, as shown in the figure below.

(12) a. * (GO-AHEAD KNOW HISTORY (state)
'Go-ahead (and) know history!'

b. (GO-AHEAD) EXPLAIN HISTORY IX_i [MY SON]$_i$ (event)
'Go-ahead (and) explain history to my son!'

Figure 23. GO-AHEAD

This test is also seen in yes-no questions with DO-YOU-MIND and clauses that are embedded under commands like EXPECT and ORDER:

(13) a. * DO-YOU-MIND [KNOW HISTORY] (state)
'Do you mind knowing history?'

b. DO-YOU-MIND [EXPLAIN HISTORY IX_i [MY SON]$_i$] (event)
'Do you mind explaining history to my son?'

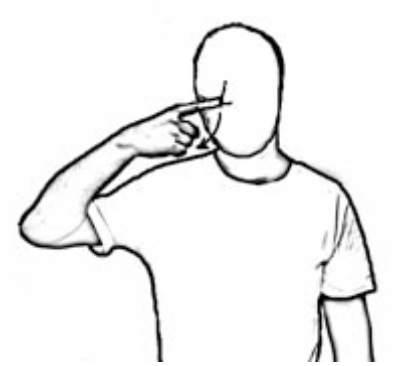


Figure 24. DO-YOU-MIND

(14) a. * I EXPECT YOU [KNOW HISTORY] (state)
'I expect you to know history.'

b. I ORDER YOU [EXPLAIN HISTORY IX_i [MY SON]$_i$] (event)
'I order you to explain history to my son.'

There is a second kind of test for the feature of dynamism independently of whether agency is present, which was required in the first kind of test. The test is that permanent states cannot be embedded under verbs of perception (Parsons 1990). The reasoning is that events, which occur at a specific time and location, may be witnessed, but not permanent states, which are not attached to any particular time or location. In ASL, one example of a verb of perception is SEE. It may embed event clauses but not stative clauses that describe permanent states. (Temporary states, on the other hand, may be witnessed, as in *I saw John sitting at his desk*.)

(15) a. # I SEE JOHN KNOW HISTORY (state)
'I saw John knowing history.'

b. I SEE JOHN EXPLAIN IX_i [MY SON]$_i$ WHAT? HISTORY (event)
'I saw John explaining history to his son all day.'

A third kind of test is that individual-level states cannot be modified for duration, unless the modifier is an adverb of simple duration like TWO-TO-FOUR 'from two pm to four pm'. There are four other ways in ASL to modify duration: the continuative morpheme, adverbs of manner, and modulation of speed. None of these are compatible with individual-level states. As noted in the previous chapter, the continuative morpheme, when it is added to the verbal root, extends the interval over which the activity unfolds. This can be understood as translating the final endpoint (F_{arb}) of the event to a point further down on the time line, i.e. the duration of the event has been lengthened. The continuative morpheme is pragmatically odd in individual-level stative sentences, in contrast to event sentences. In sentences with the continuative morpheme, objects are left-dislocated (Liddell 1980).[4] Moreover, during the production of the verb, there is eye gaze toward the location in signing space that is associated with the referent of 'my son' (Bahan 1996).

(16) a. # HISTORY, I KNOW+continuative (state)
t
'History, I knew continuously.'

b. [MY SON IX_i]$_i$ HISTORY, I EXPLAIN+continuative (event)
t
'History, I explained to my son continuously.'

Baker-Shenk and Cokely (1980) and Liddell (1980) describe several "non-manual adverbs" in ASL which involve particular formations of the mouth that occur

[4] Recall from Chapter 1 that tense is not overtly marked in ASL. The following sentences can interpreted either as present or past depending on the context. English expresses the present through a progressive form, which does not always fit the actual meaning of the ASL sentence. Thus the English simple past form is used in the following glosses.

simultaneously with movements of the hands. Two such adverbs of manner can co-occur with predicates but not if the predicates are in individual-level stative sentences. This is to be expected, since adverbs of manner modify the manner in which an event played out and therefore presuppose duration, which is missing from states. One of the adverbs inserts the tongue between the teeth and is notated as the 'th' mouth formation. Baker and Shenk translate it as "without paying attention" or "carelessly." This mouth formation is awkward with states.

(17) a. # I KNOW HISTORY (state)
th
'I knew history carelessly.'

b. [MY SON IX_i], I EXPLAIN HISTORY (event)
t th
'I explained history to my son carelessly.'

Another adverb rounds the lips and is notated as 'mm' over the predicate it co-occurs with. Baker and Shenk indicate the meaning as 'normally', 'regularly', or 'things going along fine, as expected.' Like the above adverb of manner, it is pragmatically odd when used with individual-level predicates in statives.

(18) a. # I KNOW HISTORY (state)
mm
'I knew history in a regular manner.'

b. [MY SON IX_i], I EXPLAIN HISTORY (event)
t mm
'I explained history to my son in a regular manner.'

Yet another way to modify the duration of an event is to indicate the speed at which the event occurred. This is shown by slowing or speeding the articulation of the verb and is notated by 'slow' or 'fast' over the verb. The function of these adverbs of speed can be represented by increasing (for 'fast') or reducing (for 'slow') the number of internal stages between the initial and final endpoints but otherwise keeping the distance between the endpoints constant. Thus, they presuppose duration. For that reason, they are not well-formed in individual-level state sentences, which lack duration. All of the tests, when taken together, point to individual-level States as a distinct situation type.

(19) a. # slow
I KNOW HISTORY (state)
'I knew history slowly.'

b. t slow
[MY SON IX_i], I EXPLAIN HISTORY (event)
'I explained history to my son slowly.'

(20) a. # fast
I KNOW HISTORY (state)
'I knew history quickly.'

b. t fast
[MY SON IX_i], I EXPLAIN HISTORY (event)
'I explained history to my son quickly.'

Furthermore, there is one observation which is strongly correlated with individual-level states. As mentioned in Chapter 1, topicalization is a productive construction in ASL, which left-dislocates a constituent of the sentence. This can be achieved, for example, by opening with adverbials that specify the time and location of

an event. Since this is compatible with events, topicalization is common in event sentences, albeit not required. In individual-level stative sentences, however, topicalization is less common, especially when there is no specific context that calls for it. If one wants to express a simple state 'out of the blue', canonical SVO word order is more common.

(22) State sentences

t

a. ok CLINTON, I KNOW
'I knew Clinton.'

b. better I KNOW CLINTON

(23) Event sentences

t

a. better HISTORY, I EXPLAIN IX_i [MY SON]$_i$
'History, I explained to my son.'

b. ok I EXPLAIN HISTORY IX_i [MY SON]$_i$
'History, I explained to my son.'

Having presented the properties of an individual-level state, I now turn to stage-level states. Many stage-level states in ASL are commonly formed from adjectival predicates as shown in (24).

(24) Stage-level predicates in ASL
BE-SICK
BE-SILLY
BE-MISCHIEVOUS

Like individual-level predicates, stage-level predicates are odd in imperatives. This follows from the fact that imperatives require the feature of dynamism, and stage-level predicates lack this feature, thus making them statives.

(25) a. * (GO-AHEAD BE-SICK (state)
'Go-ahead (and) be sick!'

b. * DO-YOU-MIND [BE-SICK] (state)
'Do you mind being sick?'

c. * I ORDER YOU [BE-SICK] (state)
'I order you to be sick.'

Unlike individual-level predicates, however, stage-level predicates may be embedded under verbs of perception, as shown in (26), and may be modified for duration, as indicated in (27). The pattern can be explained by following Kratzer's (1995) analysis: they involve an event argument. It is this event argument which allows them to behave like event predicates, i.e. they are embedded under perception verbs and modified for duration. If this event argument is set aside, stage-level predicates are stative in that they lack the dynamism feature.

(26) I SEE JOHN BE-SICK
'I saw John sick.'

t
(27) a. JOHN BE-SICK+continuative (state)
'John was sick continuously.'

th

b. JOHN BE-SICK (state)

'John was carelessly sick.'

Now that individual-level and stage-level states both have been covered, I turn to Events and discuss each of the four kinds in turn: activities, semelfactives, achievements and accomplishments.

3.4 Activities

3.4.1 Introduction

Activities are events that take place over an interval; the final endpoint does not necessarily have to mark the point of completion, as seen in the English examples *run*, *walk*, *swim* and *play*. Let's expand on each of these properties.

The first property is taking place over an interval. This can be understood in terms of having multiple internal stages. For example *running* denotes an event that consists of a sequence of moving the feet up and down. Each action in the sequence can represent a stage.

The other defining feature of an Activity is atelicity. Krifka (1992) offers one criterion for the feature of atelicity: the criterion of cumulativity. It says that a predicate P is cumulative if it has at least two distinct entities in its denotation, and for any x and y in P, their sum is also in P. For example, the English sentence *Yesterday John ran* denotes an Activity. It meets the criterion of cumulativity because if the event of John's running is split into many smaller sub-events of John's running, the sum of any two sub-events still falls into the denotation of the sentence.

Rothstein (2004) refines the criterion of cumulativity where not the sum, but a singular entity formed from the sum is in P. *Running* is cumulative because it is possible to divide the event of running into sub-events. Taking two of these sub-events and then

summing them still results in an instance of running. *Pushing the cart* is also cumulative as long as the referent of the cart is identical in the two sub-events.

Rothstein distinguishes cumulativity from the less precise notion of 'homogeneity' on which sub-events of an event P count as instances of P. *Pushing the* cart is homogeneous because any given sub-event is an instance of pushing the cart too. Note that homogeneity does not identity of the referent across sub-events, since there is no comparison across sub-events. the referents must be the same in order for the predicate to be cumulative. Likewise, *running* is homogeneous because a given sub-event of running counts as an instance of running. This is true as long as the event is not divided into sub-events that are so small that they no longer count as instances (Taylor 1977).

Since Rothstein's criterion of cumulativity is more stringent than the criterion of homogeneity in requiring identity of referents across sub-events, it is adopted for defining atelicity.

According to these properties, Activities contain the features [dynamic], [atelic] and [durative]. They have the following temporal schema in which dots denote successive stages of events, and the final endpoint is arbitrary (=F_{Arb}), so that it may be explicit or not.

(28) a. Temporal schema:
I……. F_{Arb}

b. Examples:
WALK 'walk'
EXPLAIN HISTORY 'explain history'
STUDY HISTORY 'study history'

As an example, explaining history requires successive stages. There is an initial stage (I). Then the following stages can involve explaining each incident, for example,

each battle in a history of war. Each of these stages can be considered an instance of explaining history; thus they meet the criterion of cumulativity. There may or may not be a final endpoint. Tests will now be presented to demonstrate the presence of each feature in sentences that denote activities.

3.4.2 Tests

Recall that states lack the feature of dynamism. This was seen through their incompatibility with imperatives that imply the presence of an agent and therefore dynamism. In contrast, activities do have this feature and should pass the tests for dynamism. This is seen by the fact that they are compatible with GO-AHEAD, DO-YOU-MIND and ORDER, all of which imply dynamism.

(29) a. (GO-AHEAD) EXPLAIN HISTORY IX_i [MY SON]$_i$
'Go-ahead (and) study/explain history!'

b. DO-YOU-MIND [EXPLAIN HISTORY IX_i [MY SON]$_i$]
'Do you mind explaining history to my son?'

c. I ORDER [YOU EXPLAIN HISTORY IX_i [MY SON]$_i$]
'I order you to explain history to my son.'

In addition to dynamism, Activities contain the feature of duration since they take place over an interval. This can be seen through the fact that the internal stages of an activity can be further modified. Below I show four different ways that the internal stages of the activity can be modified. Activities minimally contrast with semelfactives with respect to the feature of duration, so I provide an example of each kind to illustrate the importance of duration for activities. Note that these elements are awkward with States, which are missing the feature of dynamism and therefore are missing the feature of duration.

First, it is possible to extend the interval over which the activity unfolds, by adding the continuative morpheme to the verb root. The continuative morpheme is then compatible with an Activity verb.

(30) a. BOY_i IX_i WALK+continuative (activity)
'A boy there walked continuously.'

b. * BOY_i IX_i BLINK+continuative (semelfactive)
'A boy there blinked continuously.'

These examples and others in the chapter have neutral viewpoint, as explained in Chapter 4. For the purposes of English glosses, a closed interpretation is assumed, so that the translations occur in perfective form.

The second test for duration is the ability to modify the manner of the action by adding a non-manual adverb of manner like 'carelessly' (notated by 'th') or 'normally' (marked by 'mm'). These adverbs co-occur simultaneously with the verb and alter the manner of motion in the event. This is possible for Activity verbs.

th
(31) a. BOY_i IX_i WALK (activity)
'A boy there walked in a careless manner.'

th
b. * BOY_i IX_i BLINK (semelfactive)
'A boy there blinked in a careless manner.'

mm
(32) a. BOY_i IX_i WALK (activity)
'A boy there walked in a normal manner.'

mm

b. * BOY_i IX_i BLINK (semelfactive)

'A boy there blinked in a normal manner.'

Another test for duration is the ability to modify the speed at which the event unfolds over the interval by readjusting the speed of movement of the verb root. These adverbs of manner tend to co-occur with the continuative morpheme as well, in which case the distance between the endpoints is lengthened as well. Since adverbs of manner affect the interval, it follows that compatibility with such adverbs presupposes the existence of an interval. Activity verbs, containing duration, thus appear with such adverbs of manner, in contrast to semelfactives. (The semelfactive sentence can be acceptable if produced within narrative mode, or coerced as an Activity, as will be discussed in section 3.8.3 Otherwise the semelfactive in the example below requires, as part of its lexical entry, a quick movement which is motivated and which is incompatible with the 'slow' form.)

slow

(33) a. BOY_i IX_i WALK (activity)

'A boy there walked slowly.'

slow

b. * BOY_i IX_i BLINK (semelfactive)

'A boy there blinked (once) slowly.'

Yet another test for duration comes from the possibility of specifying the length of the interval through durative adverbs. Activity verbs can thus appear with durative adverbs like ONE-HOUR-durative 'for an hour', ALL-DAY 'for the whole day', ALL-NIGHT, ALL-WEEK 'for a whole week' and ALL-MONTH, among others. The variant

of ONE-HOUR under discussion unambiguously specifies duration. There is no orientation change in the dominant hand. It implies duration by suggesting that the passage of the hour does not happen quickly.

(34) a. BOY_i IX_i WALK ONE-HOUR-durative (activity)
'A boy there walked for an hour.'

b. * BOY_i IX_i BLINK ONE-HOUR-durative (semelfactive)
'A boy there blinked (once) for an hour.'

I turn to the next feature, telicity, which is missing from the temporal schema associated with Activity verb constellations. One way to see this is to contrast them with accomplishments, which have this feature. One standard test for telicity comes from contrasts between 'spend time' type of verbs and 'take time' type of verbs. Atelic verb constellations are compatible with 'spend' (*I spent an hour writing*), while telic verb constellations are compatible with 'take' (*Writing the letter took me one hour*). Since activity verbs are atelic, they should appear with 'spend' and not with 'take' and vice versa for accomplishments.

While ASL has a sign (NEED) that is similar in meaning to 'take', it is difficult to find an analogue for 'spend.' ASL has a sign, SPEND, but it has a different argument structure than English 'spend.' While the English word subcategorizes for a quantity of time and the activity itself, the ASL version subcategorizes only for the quantity of time, i.e. one can say in ASL "I spent one hour (on it)" but not "I spent one hour swimming." Since there is no linguistic element contrasting with NEED, this is a pragmatic test at best. It is pragmatically odd to use NEED with WALK in the following example, because the implication is that all instances of walking take 45 minutes, which is not the case.

(35) a. # BOY_i IX_i NEED 45 MIN WALK (activity)
'A boy there needs 45 minutes to walk.'

b. BOY_i IX_i NEED 45 MIN WALK THREE ROUND
'A boy there needs 45 minutes to walk three laps.'
(accomplishment)

There is a test which indicates the *absence* of the telic feature: compatibility with STILL. According to Loebner (1989) and Krifka (2000), *still* asserts that a sentence holds true at a time t and presupposes that the sentence is true before time t. This particle contrasts with *already*, which asserts that a sentence holds true at time t, like *still*, but presupposes that the opposite of the sentence was true before time t. Since *still* indicates a sentence to be true both at time t and before, it is consistent with an atelic verb constellation that lacks an intrinsic endpoint. Thus it may be followed by a question with *still*, whereas a telic sentence cannot. This is the case in ASL as well.

(36) a. A: JOHN RUN. (activity)
'John ran.'

B: STILL RUN?
'Is he still running?'

b. A: JOHN PUBLISH PAPER. (accomplishment)
'John published a paper.'

B: # STILL PUBLISH
'Is he still publishing it?'

3.4.3 Discussion

While some of the tests for duration and telicity in ASL are the same as those seen in other languages, there are other standard tests which are difficult to reconstruct in ASL. For instance, one test for telicity in English is based on the contrast between verbs

of termination (*stop*), which may occur with both atelic and telic predicates, and verbs of completion (*finish*, *complete*), which occur only with telic predicates. There is no corresponding contrast in ASL. While ASL has a sign glossed as FINISH, this sign differs in meaning from the English word *finish*. It is argued to be a perfective marker in the next chapter and appears with both telic and atelic predicates, so it is not a useful test of telicity. ASL also has a sign glossed as COMPLETE. The ASL sign tends to select a noun phrase (e.g. COMPLETE GRANT PROPOSAL 'completed (writing) a grant proposal'). Unlike the English counterpart, it rarely appears with a verb phrase: COMPLETE WRITE GRANT PROPOSAL 'completed writing a grant proposal' is awkward at best in ASL. Since the test depends on the ability of the word to take a verbal complement, it is difficult to reconstruct the test in ASL.

Another standard test for telicity in languages like English hinges on the contrast between 'in an hour', which appears with telic predicates, and 'for an hour', which co-occurs with atelic predicates. There is no strong parallel to the contrast in ASL. The ASL adverbial ONE-HOUR has two variants. One is used above and is notated as ONE-HOUR-durative. It moves the dominant hand in a circle without any orientation change. It appears only with durative predicates and means 'for an hour'. The other variant is notated as ONE-HOUR-twist. It is made quickly with an orientation change in the dominant hand and twists the dominant arm so that the back of the hand lands on the palm of the nondominant hand. It can mean either 'for an hour' or 'in an hour'. There is no sign in ASL that exclusively means 'in an hour'. Thus the contrast between ONE-HOUR-durative and ONE-HOUR-twist is not enough to serve as a useful test of telicity. Because ONE-HOUR-twist can mean 'for an hour', it appears with Activity verbs as well.

(37) a. JOHN RUN ONE-HOUR-durative (activity)
'John ran for an hour.'

b. JOHN RUN ONE-HOUR-twist (activity)
'John ran for one hour.'

Apart from these tests, there are sufficient tests that point to Activities as a situation type in ASL. Furthermore, other types of verbs fit the category of an Activity. As mentioned in Chapter 1, there are classifier constructions in ASL which describe an event. Some of them are Activities. Two examples are given below.

(38) ____t

a. CAR VEHICLE+MOV'move up mountain'
'A car moves up a mountain.'

_____t _____t

b. JOHN CRANE MANIPULATE'grasp crane handles'
'John manipulates the crane.'

In the first example, MOV is a root that denotes the motion of an entity. While source and goal of the motion may be optionally specified on MOV, if there is none specified, there is no spatial endpoint and thus no temporal endpoint. Since it indicates motion which takes place over an interval and has no intrinsic endpoints, it is considered an Activity. In the other example, MANIPULATE has two arguments: an agent that does the manipulating, and an (implicit) theme that is manipulated. It shows the agent moving the theme in a particular way, but without any necessary goal. Like MOV, it denotes an event taking place over time but without any intrinsic endpoints; hence it is treated as an Activity. Consistent with other Activities, duration in both classifier constructions can be modified. Dynamism is also present in both constructions. This is seen through the imperative test for MANIPULATE, but not for MOV, which lacks an agent.

3.5 Semelfactives

3.5.1 Introduction

The next situation type, semelfactive, denotes events that consist of a single stage and do not have any result or outcome (Smith 1997). Common examples in English are *cough*, *wink*, *knock,* and *jump*. The events occur quickly and do not lead to any change in the entity undergoing the event. They differ from activities in that semelfactives refer to events which can be subdivided into further stages.

Smith favors semelfactives as a distinct situation type, because they are correlated with particular linguistic properties. They can be captured through the features [+dynamic], [-durative], and [-telic].

Semelfactives are not among Vendler's (1967) original four classes. He treats them as a subclass of achievements because they are punctual. Some researchers like Rothstein (2004) group them with activities, because semelfactives describe events which tend to be repeated, and the repeated events constitute (coerced) activities.

The semelfactives in ASL present a further issue. There tends to be an iconic mapping between the real world (specifically body parts) and the signs (Taub 2001). COUGH moves the radial side of the fist (non-pinky side) against the chest, as if in an actual cough. COUGH tends to be reduplicated. This is an iconic representation of the fact that coughs tend to be repeated. However, it is possible to sign COUGH with a single movement, which indicates a single cough.

There are then two possible ways to analyze a sign like COUGH. The form with a single movement can be taken as a basic semelfactive, and the reduplicated form as a derived Activity. The other way is take the reduplicated form as the basic one, and the form with a single movement as a derived semelfactive through phonological reduction. The first way, i.e. basic semelfactive, is assumed here, because while most of the signs in this category allow both forms equally, there are in addition a few more signs that appear quite naturally with a single movement: WINK, JUMP and SNEEZE. The temporal schema for a semelfactive is presented below. E indicates a single-stage event.

(39) a. Temporal schema:
. . . E . . .

b. Examples:
COUGH ‘cough’
KNOCK ‘knock’
FOOT-TAP ‘tap a foot’
HEART-BEAT ‘heart beat’

As an example, COUGH denotes one event of a cough. Since the whole event consists of a single stage, it does not matter what occurs before or after the event, as indicated by the series of dots. Tests are now shown to indicate the properties of semelfactives.

3.5.2 Tests

Semelfactives are compatible with imperatives because imperatives imply presence of agent and therefore dynamism, which is present in semelfactives. (The glosses for the predicates indicate the form with one single movement, not the reduplicated form.)

(40) a. (GO-AHEAD) KNOCK
‘Go-ahead (and) knock!’

b. DO-YOU-MIND [KNOCK]
‘Do you mind knocking (the door)?’

On the other hand, semelfactives cannot be modified for duration, which is absent. Modifiers of duration include the continuative morpheme, adverbs of manner, and durative adverbs. As mentioned earlier and as discussed later in section 3.8.3,

semelfactives are often repeated and coerced as activities. If the semelfactives are repeated, the following sentences become acceptable.

(41) a. * BOY IX_I COUGH+continuative
'A boy there coughed continuously.'

mm
b. * BOY IX_I COUGH
'A boy there coughed normally.'

slow
c. * BOY IX_I COUGH
'A boy there coughed slowly.'

d. * BOY IX_I COUGH ONE-HOUR-durative
'A boy there coughed for an hour.'

Like activities, semelfactives are atelic and pattern like them with respect to the three telicity tests. The first test is that they are pragmatically odd with NEED, which implies a natural endpoint not present in semelfactives. Semelfactives contrast with achievements in this feature.

(42) a. # BOY IX_I NEED 45 MIN COUGH (semelfactive)
'A boy there needs 45 minutes to cough.'

b. BOY IX_I NEED 45 MIN WIN GAME (achievement)
'A boy there needs 45 minutes to win the game.'

The next test is that semelfactives are compatible with STILL, which is consistent with the absence of a natural endpoint. Note that the first instance of COUGH is made with a single movement and is a basic semelfactive, which is subject to the test. The second instance of COUGH is repeated and coerced as an activity, but it is not being tested.

(43) a. JOHN COUGH-once. STILL COUGH-repeated (semelfactive)
'John coughed. He is still coughing.'

b. # JOHN WIN GAME. STILL WIN. (achievement)
'John won the game. He is still winning it'

3.5.3 Discussion

All the examples of semelfactives seen so far in ASL (COUGH, KNOCK, FLAP-WING, as well as WINK/BLINK) are shown to be atelic. The criteria that Krifka (1992) and Rothstein (2004) provide for atelicity (cumulativity) do not apply to semelfactives, because semelfactives involve only a single stage, and it is not possible to divide this stage into smaller stages, which is the condition for the cumulativity criterion. Rather, what underlies the atelicity of semelfactives is the lack of change of state in an entity and intrinsic endpoints are present only because they are punctual (Smith 1997).

The set of semelfactives in ASL does not seem to include any classifier constructions. One possible reason is that many classifier constructions convey duration, and duration is missing in semelfactives.

3.6 Achievements

3.6.1 Introduction

I now turn to achievements, which are events that occur in a moment and that involve a change of state in the end (Smith 1997, 2003). The change of state is correlated

with an intrinsic endpoint. The English predicates *win game*, *arrive*, *notice*, and *fall* are Achievements, because they refer to events that happen quickly and that lead to a change in the entity undergoing the event.

One way to identify an achievement is to use Krifka's (1992) criterion of quantization. The criterion tests for telicity. Quantization indicates a change has taken place. The criterion says that if an event e is in the denotation of sentence X, and X is quantized, there is no proper part of e which is also in the denotation of X. Let's take an English example of an achievement, *John won a game*. If this event is broken into smaller sub-events, none of these sub-events can be described by John's winning a game, because they either occur before the point at which John has won or afterwards.

The criterion of S-cumulativity (Rothstein 2004) helps to clarify what is not an achievement. It says that a singular entity formed from the sum of subevents that are in P is in P. Because achievements are telic, the criterion does not apply to them. Telicity means there is an endpoint between state A and state B, which is different than state A. A singular entity formed from the sum of two sub-events under state A does not include the change encoded by achievements; likewise, the sum of two sub-events under state B does not include the change.

Achievements are identified by the features [+dynamic], [-durative], [+telic] (Smith 1997). The temporal schema for achievements is shown below. As in the temporal schema for semelfactives, E stands for a single-stage event, with the addition of a subscript R indicating some result of the event.

(44) a. Temporal schema:
…E_R…

b. Examples:
ARRIVE 'arrive'
PASS TEST 'pass a test'
WIN GAME 'win a game'

To illustrate the temporal schema, consider PASS TEST. The single-stage event consists of achieving a score on a test. The event can lead to one of two possible results: i) the subject scores the minimum required or higher, or ii) the subject scores below the minimum. In the case of PASS TEST, the result is the former possibility.

3.6.2 Tests

Like the other types of (dynamic) events seen so far, achievements have agents so they can appear in contexts that imply the presence of an agent, i.e. imperatives and complements of DO-YOU-MIND. There are some achievements that may seem odd in these contexts, because agents do not necessarily have full control over the outcome of the event (e.g. WIN GAME may depend in part on luck), but it is possible to find other examples like ARRIVE where the agent presumably has more control over the outcome.

(45) a. PLEASE ARRIVE ON-TIME
'Please arrive on time!'

b. DO-YOU-MIND [ARRIVE ON-TIME]
'Do you mind arriving on time?'

Like semelfactives, achievements cannot be modified for duration, which is lacking. Thus they are not compatible with the continuative morpheme, adverbs of manner, or durative adverbs. Achievements differ minimally from accomplishments with respect to these tests.

(46) a. * TEST, BOY IX_i PASS+continuative (achievement)
t
'(They) passed the test continuously.'

t

b. HOUSE, BOY IX_i BUILD+continuative (accomplishment)
'(They) built the house continuously.'

mm

(47) a. * BOY IX_i WIN GAME (achievement)
'I won the game normally.'

mm

b. BOY IX_i BUILD HOUSE (accomplishment)
'I built the house normally.'

slow

(48) a. * BOY IX_i PASS TEST (achievement)
'(They) passed the test slowly.'

slow

b. BOY IX_i BUILD HOUSE (accomplishment)
'A boy there built the house slowly.'

(49) a. * BOY IX_i PASS TEST ONE-HOUR-durative (achievement)
'A boy there passed the test for an hour.'

b. BOY IX_i BUILD HOUSE ONE-MONTH (accomplishment)
'A boy there built the house for one month.'

Achievements are telic, since they have an intrinsic natural endpoint. This is shown by three tests. The first test is NEED, which implies a natural endpoint. Since a natural endpoint is present in achievements, NEED can co-occur with achievements.

(50) a. BOY IX_i NEED 45 MIN WIN GAME (achievement)
'A boy there needs 45 minutes to win the game.'

b. * BOY IX_i NEED 45 MIN COUGH (semelfactive)
'A boy there needs 45 minutes to cough (once).'

The next test is incompatibility with STILL. The event denoted by the achievement verb has an intrinsic endpoint before which the state was different; this clashes with the presupposition triggered by STILL that the state is the same as before the endpoint.

(51) a. # JOHN WIN GAME. STILL WIN. (achievement)
'John won the game. He is still winning it'

b. JOHN COUGH-once. STILL COUGH-repeated (semelfactive)
'John coughed. He is still coughing.'

3.6.3 Discussion

Achievement constitutes a distinct situation type, since it is correlated with a number of linguistic properties. Two observations about achievements in ASL are noteworthy. First, they tend to have one of two argument structures. They can have just one argument, e.g. FALL, ARRIVE, and DIE. The corresponding words in many languages are considered unaccusative, i.e. where the subject receives the role of the theme. This is consistent with the nature of Achievements, since they describe a change in state, and the subject/theme undergoes a change. For example, FALL denotes a change from an upright position to a prone position; ARRIVE indicates a change from absence to presence; and DIE marks a change from being alive to no longer living.

The other argument structure that is common to achievement verb constellations in ASL has two arguments, usually one animate and the other one inanimate. An example is JOHN PASS TEST. As in the first kind of argument structure, the subject undergoes a change, e.g. from not yet having passed to the test to having passed the test..

The second observation is that there are few examples of classifier constructions which fit the category of achievements, since many classifier constructions crucially involve duration, and achievements lack duration. One possible example is FALL, which is lexicalized from the classifier predicate MOV combined with a twisting movement that lands the hands downward and a morpheme marking the theme as two-legged, i.e. 'a two-legged person moves downward' (Supalla 1986). This classifier construction shows an instantaneous change in the state of the theme, i.e. from upright to prone.

3.7 Accomplishments

3.7.1 Introduction

Accomplishments are events that take place over an interval and culminate in completion at the end of the interval. The English predicates *drink a glass of water*, *open the door*, *learn French*, and *break a cup* are all examples of accomplishments. There are various ways to treat them. Vendler (1967) and others following his approach take accomplishments to be one of the basic situation types, while Bach (1986) sees accomplishments as having 'activity' stages and a goal stage, with one related to the other. In a similar vein, Rothstein (2004) argues that an accomplishment consists of an activity that is incrementally related to a gradual change of state. It is this last sense that seems to fit the ASL examples of accomplishments the best: there is a process (i.e. an activity) which culminates in a change (i.e. an achievement). As a telic situation type, it does not meet the criterion of cumulativity (Krifka 1992, Rothstein 2004).

Thus, in addition to the [+dynamic] feature, Accomplishments share the features of [+durative] and [+telic] with Activities and Achievements respectively, in the sense of Smith (1997). Their temporal schema is provided below. I and F stand for initial and final

endpoints respectively, while the subscript on F stands for 'natural result' to indicate a natural endpoint for the event.

(52) a. Temporal schema:
I……..F $_{\text{Nat R}}$

b. Examples:
COOK S-A-L-M-O-N[5] 'cook salmon'
BUILD HOUSE 'build a house'
WRITE PAPER 'write a paper'

For example, COOK S-A-L-M-O-N describes an event that has a starting point, e.g. the preparation of the fish before being put into the oven. The little dots between the two endpoints indicate the process of the fish cooking in the oven. F represents the endpoint when the fish has cooked sufficiently enough to be eaten. The natural result is that the fish is now cooked, as opposed to uncooked.

3.7.2 Tests

Accomplishments are compatible with imperatives and complements of DO-YOU-MIND and ORDER, because they imply the presence of an agent and therefore dynamism, which is present in accomplishments.

(53) a. (GO-AHEAD) COOK S-A-L-M-O-N
'Go-ahead (and) cook the salmon!'

b. DO-YOU-MIND [COOK S-A-L-M-O-N]
'Do you mind cooking the salmon?'

[5] Separating the letters with dashes is a notational convention in the sign language literature for indicating the word is fingerspelled.

Unlike achievements, accomplishments have the feature of duration, which can be further modified by the continuative morpheme, adverbs of manner and durative adverbs, as shown in (54).

(54) _____t

a. S-A-L-M-O-N, BOY IX_i COOK+continuative
'A boy there cooked the salmon continuously.'

_____mm

b. BOY IX_i COOK S-A-L-M-O-N
'A boy there cooked the salmon normally.'

_____slow

c. BOY IX_i COOK S-A-L-M-O-N
'A boy there cooked the salmon slowly.'

d. BOY IX_i COOK S-A-L-M-O-N ONE-HOUR-durative
'A boy there cooked the salmon for an hour.'

Accomplishments also have the feature of telicity. This can be seen in their compatibility with 'take-time' verbs like NEED, which is consistent with the fact that the accomplishment verbs have a natural endpoint.

(55) BOY IX_i NEED 25 MIN COOK S-A-L-M-O-N
'A boy there needs 25 minutes to cook the salmon.'

Telicity is also diagnosed through compatibility with STILL. STILL presupposes that the state is the same as before the endpoint. As with achievements, this presupposition clashes with the meaning of an accomplishment that the state has changed

after the endpoint. In contrast, activities have no such endpoint and are compatible with STILL, as seen earlier.

(56) a. A: JOHN BUILD HOUSE. (accomplishment)
'John built a house.'

B: # STILL BUILD
'Is he still building it?'

b. A: JOHN RUN (activity)
'John ran.'

B: STILL RUN?
'Is he still running?'

Another characteristic of accomplishments is that they are ambiguous when combined with 'almost.' This is true in languages where the scope of 'almost' is not obvious from syntax and is the case for ASL as well. 'Almost' may take scope over the durative feature and contribute the meaning that the process almost started. Alternatively, it may take scope over the telic feature and contribute the meaning that the process was almost completed.

There is a sign native to ASL that corresponds to 'almost' and that is made with the F-handshape (thumb and index finger contacting each other, with other fingers spread apart and the radial side of the hand facing the forehead) moving away from the temple, with clenched teeth. The ambiguity can be seen through the fact that the accomplishment sentence is compatible with adjuncts that bias either meaning.

(57) a. BOY IX_i ALMOST BUILD HOUSE, BUT NO MONEY
'A boy there almost built the house, but had no money

(so he never started).'

b. BOY IX_i ALMOST BUILD HOUSE, BUT NOT FINISH
'A boy there almost built the house but didn't finish
(so he never completed it)'

While the ambiguity with ALMOST attests to the two features that accomplishments have (duration and telicity), it is not a test of telicity per se, since it does not help to distinguish between accomplishments and activities, nor between achievements and semelfactives, since there is only one meaning possible when ALMOST is combined with the latter three situation types.

3.7.3 Discussion

There is one important observation regarding accomplishments in ASL. Across languages, it is common for accomplishments to have an argument structure in which the object as theme undergoes change as a result of an Activity.[6] There are several types of Accomplishments which are unique to ASL and which conform to this kind of structure, namely three types of classifier constructions, as exemplified below.

(58) a. CAR VEHICLE+xMOVy
'A car moved from here to there.'

b. JOHN CUP+xMANIPULATEy
'John moved the cup from here to there.'

c. JOHN TOOTHBRUSH+HANDLE
'John brushed his teeth (with a toothbrush).'

[6] In addition, other kinds of argument structures are common to accomplishments across languages, such as those with object as experiencer.

The first type of classifier predicate, xMOVy, denotes the motion of an entity from a source to a goal. The source and goal are perceptually visible as spatial endpoints in signing space. The motion constitutes an activity, and the goal provides a natural (temporal) endpoint to the activity. As a result of the activity, the entity has changed its location. Hence xMOVy is one type of accomplishment.

The second type, MANIPULATE, indicates that an agent manipulates an object from one place to another. It is similar to xMOVy, except that there is an agent who is responsible for the motion of the object. If source and goal are made perceptually visible through spatial locations in signing space, they provide natural endpoints to the activity described by MANIPULATE. Thus it counts as an accomplishment.

The last one, HANDLE, means to handle an entity with an instrument. In the above example, the entity is the teeth, and the instrument is the toothbrush, as shown by the hand which takes on the shape of handling the instrument. Thus the example might be literally translated as 'John handles (his teeth) with a toothbrush.' The handling of the teeth (i.e. the brushing of the teeth) is an activity which culminates in clean teeth and is thus an accomplishment.

All of these classifier constructions meet the diagnostic tests for an accomplishment. For example, in all cases, duration may be modified with the continuative morpheme or with an adverb of manner. Similarly, telicity is detected through compatibility with NEED and completive adverbs but not with STILL.

3.8 Coerced situation types

3.8.1 Introduction

I have discussed situation types at a basic level. By adding a morpheme, an object, an adverb, or another linguistic element, it is possible to change the situation type of a verb constellation. For example, the English sentence *John ran* is an Activity. When the prepositional phrase *to the park* is added as in *John ran to the park*, the situation type of the new verb constellation is an Accomplishment, because the addition of the

prepositional phrase introduces an endpoint for the Activity. Changing the basic situation verb constellation through the addition of a linguistic element can be understood as *coercion*, a term originally due to Moens (1987). Coercion can be triggered not only by a linguistic element but also by information in the context. Thus, coercion can mask the basic situation type of a verb constellation and is one reason that the situation type of a sentence is not always transparent. Moens (1987), Krifka (1992), deSwart (1998), Green (2000), Zucchi (1998) and Smith (1997. 2003), among others, provide various ways to conceptualize coercion.

Moens (1987) assumes that there is an aspectual network formed from aspectual categories (roughly the situation types), with routes between them. The routes between the aspectual categories are called aspectual transitions, and some of them require explicit aspectual operators. If there are no explicit operators in the language, the transitions are free as long as the context is consistent with the change. In his examples, reproduced below, the italicized part is an explicit aspectual operator that licenses the aspectual transition, which is indicated below the sentence. Processes in Moens' terminology are roughly equal to activities, while events in his terms correspond to achievements and accomplishments.

(59) a. My program ran *in less than four minutes* (this morning).
process --> event

b. *Suddenly*, I knew the answer.
state --> event (inchoative)

c. I read a book *for a few minutes*.
event --> process

d. John played the sonata *for about eight hours*.
event --> state (iterative)

e. *For months*, the train arrived late.
event --> state (habitual)

Krifka (1992) has focused on alternations between sentences like *John drank wine* with *John drank a glass of wine*. The first sentence describes an Activity, while the latter sentence describes an Accomplishment, according to the diagnostic tests for these situation types. The difference between the two sentences lies in whether the object is a mass noun or a count (quantized) noun. Krifka provides a semantic account which makes an explicit link between this distinction and the situation type of a verb phrase.

DeSwart (1998) differs from Moens and Krifka slightly in her conception of coercion. For her, coercion is a re-interpretation of a clause "whenever there is a conflict between the aspectual nature of the eventuality description and the input condition of some aspectual operator" (p. 349). Coercion, as she understands it, is not limited to the domain of aspect; it can appear in other domains where there is a clash between a function and its arguments, and the arguments are re-interpreted to fit the function. Her 'eventuality description' roughly corresponds to 'situation type', and like Moens, she assumes only three eventuality descriptions: states, processes (roughly equal to activities) and events (roughly equal to achievements and accomplishments). Aspectual operators map one eventuality description into another; for example, the progressive maps a process or an event into a state; a *for*-adverbial maps a state or process into an event; and an *in*-adverbial maps an event into an event. If the eventuality description does not fit the input condition for an aspectual operator, it undergoes coercion so that it fits the input condition. Coercion, which is always covert, occurs as a function from one category of eventuality description to another category. She posits three covert coercion operators in all to account for the English data.

(60) a. C_{eh}: event --> homogeneous situation (= state/process)
b. C_{he}: homogeneous situation (= state/process) --> event
c. C_{sd}: state --> dynamic (= process/event)

Green (2000), focusing on African American English (AAE), discusses one instance of coercion that goes from one type of state to another type of state. As mentioned in section 3.3.1, there are two types of states: individual-level states, and stage-level stages. Roughly, individual-level states refer to permanent properties (*be tall*), while stage-level states are temporary properties (*be sick*). AAE has an aspectual operator *be* which normally applies to stage-level states and carries a generic/habitual reading. Green follows Kratzer's (1995) assumption, noted in section 3.3.1, that stage-level states have a Davidsonian event argument. Green argues that the habitual operator HAB, introduced by the *be*-construction, binds the event argument so that there is a pattern of these events. Individual-level predicates lack such an event argument, and since there is no event variable for the HAB operator to bind, individual-level predicates are not expected to appear in the be-construction. However, as (62) shows, it is possible for them to appear in this construction, provided that they are coerced as stage-level predicates and then subject to the HAB operator. In the notation below, 'P' stands for a pragmatic variable which restricts the cases in which the operator applies; 'e' stands for the event argument; and 'x' stands for an individual variable.

(61) a. Bruce be crying.

b. HAB_e [(P, e)] [cry (Bruce, e)]

(62) a. Sue be having a lot of books.

b. HAB_e [P(e)] [(∃x) [a lot of books(x) have (Sue, x, e)]]

Zucchi (1998) refines previous analyses of coercion ('aspect shift' in his terms) by noting that coercion is not always possible for some predicates, and that coercion occurs only under certain circumstances. Following Moens and deSwart, Zucchi recognizes three aspectual classes (or situation types): states, processes and events. He observes that not all events can be coerced as processes, as shown in (63), and not all

statives can be coerced as processes, as illustrated in (64). Moreover, the sentence in (64a) is not grammatical if the clause 'more and more as each day goes by' is removed, as indicated in (65). In fact, he points out that some predicates give mixed results when they are subject to a number of tests to determine their situation type.

(63) a. John baked a cake in an hour/for an hour.
b. John proved a theorem in an hour/*for an hour.

(64) a. John is resembling his father more and more as each day goes by.
b. * This motor is being noisy more and more as each day goes by.

(65) a. John is resembling his father more and more as each day goes by.
b. * John is resembling his father.

To explain why 'for an hour' does not always appear with events, Zucchi proposes two kinds of events: one kind, illustrated by 'prove a theorem', has a clear completion, while the other kind, exemplified by 'bake a cake', has a more vague notion of completion. It is this vague notion of completion that allows this type of event to be combined with a *for*-adverbial. To account for the fact that not all statives appear with the progressive, Zucchi again distinguishes two forms of the progressive. One form applies to copular verb phrases and has the meaning of an 'active progressive', i.e. to be doing something. Since the motor is an inanimate entity which cannot do something of its own will, it does not make sense to use the active progressive with this verb phrase. The other form only applies to non-copular verb phrases and yields true statives, as in the case of 'resemble his father.'

Smith (1997, 2003) provides a conceptual framework for understanding the mechanism of coercion. (See Xiao and McEnery 2004 for a refinement of this framework.) Since this framework covers all possible cases of coercion, it is adopted here to analyze the different cases of coercion in ASL. The key concept is that there are two

levels, a basic level and a coerced (or derived) level. At the basic level, the verb constellation is in its barest form, which eliminates any optional elements. The basic situation type of the constellation may then be computed. At the derived level, linguistic elements are added to the verb constellation. The situation type of the expanded constellation is computed through the same diagnostic tests for the basic situation type. By comparing the verb constellation at the two levels, it becomes possible to trace the shift in situation type, i.e. coercion, to a particular linguistic element, and to formalize the shift in terms of features.

The main principle behind coercion is the alpha rule of 'external override.' It says that the feature (f) of an added linguistic element (represented by X below) may override the feature of the verb constellation (represented by VCON). Thus the value of the feature in the derived verb constellation (DVON) is taken from the feature for X (β), not for VCONN (α).

(66) Coercion: Alpha rule of External Override

$_{VCON}[a,b,f\alpha] + _{X}[f\beta] \dashrightarrow _{DVCON}[a,b,f\beta]$

Here is one example from Smith (2003: 86). *Write* by itself has Activity features. When combined with a quantized object like *a letter*, it becomes an Accomplishment. When further combined with a durative adverb like *for an hour*, it becomes an Activity again. This last shift is represented formally as a coercion rule that interprets the combination of a verb constellation with a certain adverbial as an atelic derived verb constellation. In the following notation, 'S' stands for sentence; 'e' for event; and 'Adv' for adverb.

(67) VCON: Mary wrote a letter.
DVON: Mary wrote a letter for an hour.

Coercion rule:

$_{S}[_{VCON}\ [_{e}[+\text{Telic}]] + {}_{ADV}[\text{-Telic}]] \rightarrow {}_{DVON}[_{e}[\text{Activity}]]$

Such coercion rules are intended to be descriptive generalizations of what occurs in the semantics of a language and are not intended to guide any composition of features. Likewise, as discussed early in the chapter, the features are associated with systematic linguistic correlates (including both semantic and syntactic ones), and the names for these features are intended to be descriptive labels that cover these clusters of linguistic correlates. While the set of features is universally available across languages, the linguistic correlates for the features may vary from language to language. Accordingly, the coercion rules on these features may be subject to cross-linguistic variation.

In ASL, I have sketched four coercion rules. They are presented in turn in this section. The first rule changes an event sentence into a (generalizing) state sentence, the second adds a durative feature to yield an Activity, and the last two add a telic feature to produce an Accomplishment. (As discussed in the next chapter, FINISH bounds an event; this has to do with viewpoint aspect and is separate from telicity, i.e. FINISH does not contribute a telic feature and thus does not participate in coercion.)

There are no coercion rules that convert a verb constellation into a Semelfactive or an Achievement. This seems to be true in other languages as well and can be explained by the fact that Achievements have a negative value for duration, and Semelfactives have a negative value for both duration and telicity. There is a possible feature-preserving constraint on coercion rules, i.e. they add positive values to override negative values, but not override existing positive values (Rothstein 2004).

3.8.2 Coerced states

Several linguistic elements in ASL trigger the coercion of an event sentence into a state sentence. First, the particles TEND ‘tend to’ and/or POSS++ ‘my (tendency) is to’ introduce a tendency or characteristic that is predicated of the subject.

(68) a. MY BEST-FRIEND STUDY HISTORY (event)
'My best friend studied history.'

b. MY BEST-FRIEND TEND STUDY WHAT? HISTORY (state)
'My best friend used to study history.'

(69) a. BOY IX_i STUDY HISTORY (event)
'A boy there studied history.'

b. BOY IX_i POSS++ STUDY HISTORY (state)
'One boy's tendency is to study history.'

Another way to coerce a State from an event sentence is to attach the habitual morpheme. As mentioned in the previous chapter, the morpheme reduplicates a shortened form of the movement in the citation form. Like the particles, it turns the sentence into a generalizing sentence predicating a property of an individual. It tends to appear with activities and semelfactives.

(70) a. I STUDY C-L-I-N-T-O-N (event)
'I studied (the life of President) Clinton.'

b. I STUDY+habitual C-L-I-N-T-O-N (state)
'I habitually study (the life of President) Clinton.'

Sometimes, Activities, Achievements and Accomplishments in bare form can be interpreted as generalized states. They predicate a property of the subject. Generalizing states do not denote a particular situation and are thus distinguished from states. They are analyzed as involving a null operator for the generalizing state, $\varnothing_{GEN}$. The sentences may be supplemented by a frequency adverb like ALWAYS, ALL-TIME or OFTEN. They

"contribute to the temporal location of a situation. They do so by indicating the recurrent pattern of events or states within the reference interval" (Smith 1997: 116).

(71) a. JOHN HELP MY FRIEND (event)
'John helped my friend.'

b. $\varnothing_{GEN}$ JOHN (ALWAYS) HELP MY FRIEND (state)
'John (always) helped my friend in general.'

Diagnostic tests for basic-level states confirm that the coerced sentences are States. For example, states are odd with imperatives. The coerced sentences are likewise odd with imperatives, in contrast to event sentences. This is shown below for the sentence with the null operator for the generalizing reading, along with the frequency adverb ALWAYS; a parallel pattern holds for sentences with TEND/POSS particles and the habitual morpheme.

(72) a. DO-YOU-MIND HELP MY FRIEND? (event)
'Do you mind helping my friend'

b. # $\varnothing_{GEN}$ DO-YOU-MIND ALWAYS HELP MY FRIEND? (state)
'Do you mind always helping my friend?'

In addition, permanent states may not be embedded under verbs of perception. Likewise, the coerced sentences cannot appear under verbs of perception, unlike event sentences. This is shown for the sentence with the frequency adverbial, but the same pattern appears with sentences containing TEND/POSS particles or the habitual morpheme.

(73) a. YESTERDAY I SAW JOHN HELP MY FRIEND (event)
'Yesterday, I saw John help my friend.'

b. # $\varnothing_{GEN}$ YESTERDAY I SAW JOHN ALWAYS HELP MY FRIEND (state)
'Yesterday I saw John always helping my friend.'

The coercion rules for each of the coerced States are sketched below. In each case, it is the non-dynamic feature of the linguistic element that overrides the dynamic feature of the verb constellation. Below, 'v' stands for verb, 'Dur' for durative, 'Prt' for particle, 'Dyn' for dynamic, 'Asp' for aspect, 'Hab' for habitual, and 'Gen' stands for the null operator for the generalizing sentence. The first rule says that a non-dynamic particle (in this case, TEND and POSS++), notated by [-Dyn], converts an accomplishment into a State. The second rule says that the habitual morpheme [Hab], when it appears on an accomplishment, leads to a State. The last rule says that the null operator for a generalizing sentence coerces an accomplishment v[Telic,Dur] into a State.

(74) b. Durative verb and non-dynamic particle:
$_{VCON}$[[NP] ($_{PRT}$[-Dyn]) $_{V}$[Telic, Dur] [NP]] → $_{VCON}$[$_{st}$[State]]

c. Durative verb and habitual morpheme:
$_{VCON}$[[NP] ($_{V}$[Telic, Dur]+$_{ASP}$[Hab] [NP])] → $_{VCON}$[$_{st}$[State]]

a. Durative verb and generalizing morpheme:
$_{VCON}$[[NP] ([Gen]) $_{V}$[Telic, Dur] [NP]] → $_{VCON}$[$_{st}$[State]]

These coercion rules can be collapsed into a more abstract rule that converts an event sentence into a generalizing State. In essence, a non-dynamic element [-Dyn] changes a dynamic sentence [+Dyn] into a State. In the notation below, 'st' stands for state and 'General' stands for generalizing State.

(75) Generalizing rule:

$_{S}[_{VCON}[+Dyn] + _{ADV/PRT/ASP}[-Dyn]] \rightarrow _{DVCON}[_{St}[General]]$

3.8.3 Coerced activities

Earlier, in section 3.5, it was assumed that basic-level semelfactives exist. They possess a number of linguistic correlates. For instance, they do not pass tests that indicate the presence of duration or telicity. In addition, they are produced with a single movement of the hands. These properties separate them from the activities corresponding to the semelfactives, in spite of the fact that the corresponding activities are more commonly used.

(76) a. BOY IX_i COUGH (semelfactive)
'A boy there coughed (once).'

b. BOY IX_i COUGH+iterative (activity)
'A boy there coughed.'

The Activity verb involves adding the iterative to the Semelfactive verb. The iterative morpheme, first mentioned in Chapter 2, is argued to trigger a shift from a basic-level semelfactive to a derived activity. The derived activity is often lexicalized and exhibits linguistic correlates that are consistent with a basic-level activity, not a semelfactive. For instance, it is possible to modify the verb with an adverb of manner or with a durative adverb, which indicates that the verb has duration.

mm

(77) a. # BOY IX_i COUGH (semelfactive)
'A boy there coughed (once) effortlessly.'

mm

b. BOY IX_i COUGH+iterative (activity)
'A boy there coughed effortlessly.'

(78) a. # BOY IX_i COUGH FIVE MINUTE (semelfactive)
'A boy there coughed (once) for five minutes.'

b. BOY IX_i COUGH+iterative FIVE MINUTE (activity)
'A boy there coughed for five minutes.'

Semelfactives and activities differ only in one feature: duration. The shift from a semelfactive to an activity then consists of adding a [+durative] feature that overrides the [-durative] feature of the semelfactive. The durative feature is contributed by the iterative morpheme. In the rule, the semelfactive is indicated by [Atelic, -Dur]. The version in (80) is a more abstract version of the coercion rule that highlights the features at play in coercion to an Activity: the [+Dur] feature of the iterative morpheme overrides the [-Dur] feature of the verb constellation to result in an Activity.

(79) Semelfactive verb and iterative morpheme:
$_{VCON}$[[NP] ($_{V}$[Atelic, -Dur]+$_{ASP}$[Iterative])] → $_{VCON}$[$_{e}$[Activity]]

(80) Iterative rule:
$_{S}$[$_{VCON}$[Atelic,-Dur] + $_{ASP}$[+Dur]] → $_{DVCON}$[$_{e}$[Activity]]

3.8.4 Coerced accomplishments

There are two prominent kinds of verb constructions which are prominent in ASL: 'spatial verbs' and resultative verb constructions. They are both coerced accomplishments which occur by changing a certain feature of a complete verb constellation.

Spatial verbs constitute one class of verbs in ASL (Padden 1983), as discussed in Chapter 1. They involve the notion of PATH with source and goal arguments in the sense of Meir (1998). Examples of spatial verbs include FLY, DRIVE-TO, WALK(CL-two legs), and MOVE. They refer to activities. Thus they can be used in a context that asks how people arrived in Dallas. They stand in contrast to ARRIVE, which is an achievement verb.

Spatial verbs may also combine with the hold morpheme, which was introduced in Chapter 2 and is inspired by Supalla and Newport's (1978: 103) observation that "hold manner corresponds to an action with specified spatial end-points." The hold morpheme functions as a telic marker. It provides a final endpoint to the event described by the spatial verb. The hold morpheme is mapped onto locations in signing space. To indicate that one flies from Austin to Dallas, the signer set up a location in the signing space that refers to Austin, notated as 'a', and sets up a second location, notated as 'd' to refer to Dallas. The signer then adds the hold morpheme to the sign FLY by directing the movement toward the location of Dallas.[7]

(81) a. BOY IX_i ARRIVE TOWN HOW? FLY (activity)
'A boy there arrived in town by flying.'

b. BOY IX_i $_a$AUSTIN $_d$DALLAS $_a$FLY+hold$_d$ (accomplishment)
'A boy there flew from Austin to Dallas.'

Tests for telicity confirm that the spatial verb denotes an Activity while the spatial verb plus the hold morpheme indicates an Accomplishment. For instance, the following Activity sentence is pragmatically odd with NEED. It is felicitous only if uttered in the air, in which case the conversational partners presumably know where they are flying to

[7] IX has several functions. As mentioned in Chapter 1, IX functions as an indefinite determiner when it appears pre-nominally. It also functions as a pronoun when it appears without a noun. Then IX functions as an adverb meaning 'there', especially when it appears after a noun. The third sense is intended in the present examples. As an adverb, it assigns the referent of BOY to a location in signing space.

and have in mind that particular instance of flying when uttering that sentence. In contrast, the Accomplishment sentence can add NEED in any context.

(82) a. # BOY IX_i NEED 45 MIN FLY (activity)
'A boy there needs 45 minutes to fly.'

b. BOY IX_i NEED 45 MIN $_a$AUSTIN $_d$DALLAS $_a$FLY+hold$_d$
'A boy there needs 45 minutes to fly from Austin to Dallas.'
(accomplishment)

Activities and Accomplishments differ only in the feature of telicity. The distinction between FLY and FLY+hold is analogous to the distinction between 'I walk' and 'I walked to the park.' The distinction in English is marked by a linguistic element, namely the preposition 'to' and the phrase it heads. In ASL, the distinction is marked by the use of the hold morpheme. Thus the coercion rule for the coerced accomplishment adds a telic feature via the hold morpheme, which overrides the atelic feature of the Activity verb. The first version includes the NPs that are present in the verb constellation, while the second version is a more abstract one that focuses on the relevant features.

(83) Activity verb and hold
$_{VCON}$[[NP] $_{V}$[Atelic, +Dur] + [hold]] → $_{VCON}$[$_{e}$[Accomplishment]]

(84) Localizing rule
$_{S}$[$_{VCON}$[Atelic,+Dur] + [+Telic]] → $_{DVCON}$[$_{e}$[Accomplishment]]

The rule in (84) also applies to some classifier constructions that denote the motion of an entity and thus an Activity. When the hold morpheme is added, the resulting meaning is that the event has come to an end. The construction then becomes an

Accomplishment. The same is true for activities more generally. For example, attaching the hold morpheme to a simple Activity like WALK results in a coerced accomplishment.

The contrast between constructions with and without the hold morpheme is confirmed, for example, by the telicity test of adding NEED 45 MINUTE. The examples below are adapted from Wilbur and Wood (2000). Speaker B's response in the Activity sentence is not ungrammatical. It is only pragmatically odd if the endpoint of the path of movement is not known, e.g. if it is not specified earlier in the discourse. In contrast, the response in the Accomplishment sentence is well-formed no matter what the context is.

(85) a. # BRIDGE(ground) BOAT(figure) VEHICLE-CL+MOV('under-bridge')
HOW LONG? 45 MIN (activity)
'It took 45 minutes for the boat to move, passing under the bridge.'

b. BRIDGE(ground) BOAT(figure)VEHICLE-CL+MOV+hold
HOW LONG? 45 MIN (accomplishment)
'It took 45 minutes for the boat to move to a point under the bridge.'

Now I turn to the other case of coerced accomplishment seen in ASL, the resultative verb construction. It involves a main predicate which names an Activity and a particle which shows both the process (= Activity) and the final endpoint of the Activity described by the main predicate. Several examples are provided below.

(86) a. BOY IX_i DRINK WATER EXTENT-down+hold
'A boy there drank a glass of water empty.'

b. BOY IX_i DRAW CIRCLE OUTLINE-circle+hold
'A boy there drew a circle in a complete circle.'

c. BOY IX_i HAMMER METAL FLAT-down+hold
'A boy there hammered a metal flat.'

These examples differ from English resultative constructions (e.g. *I hammered the metal flat*) in that in English, the process is denoted by the main verb while the resulting state of the theme is usually conveyed by an adjective. In ASL, the process involving the agent is denoted by the main verb, while the process of change and the resulting state in the theme is denoted by a particle in ASL.

The particles indicate extent, e.g. the volume of water that has been consumed from a glass or the extent to which a piece of metal is hammered flat. The particles can indicate extent by varying the aperture of the handshape (e.g. the distance between the thumb and the fingers) and adding the hold morpheme. The combination expresses the quantity being affected over time and when that quantity reaches a bound (cf. Krifka 1998).

The hold morpheme on the particles then contribute an endpoint to the activity denoted by the main predicate and therefore make the verb constellation telic. It does not matter whether event is interrupted or not, because the event has started and has come to a point along the path to its goal state, whether intended or interrupted. This conclusion is confirmed by the fact it is possible to add NEED 5 MINUTE 'needs five minutes' to the above constellations, indicating they are telic.

(87) a. # DRINK WATER NEED 5 MINUTE
'Drinking water takes 5 minutes.'

b. DRINK WATER EXTENT+hold NEED 5 MINUTE
'Drinking this/that much of water takes 5 minutes.'

In all the examples, the object noun phrase is ambiguous between a mass noun and a count noun. The verb constellation minus the particle is accordingly ambiguous between an Activity and an Accomplishment. When the particle is added, the ambiguity disappears. The resulting verb constellation is an Accomplishment. The coercion rule is

given below. A more abstract form of the rule follows. The rule is a sketch of a compositional rule which would be needed in a full account.

(88) Activity/Accomplishment verb and particle:

$_{VCON}$[[NP] $_{V}$[Atelic,+Dur]+$_{PRT}$[+hold] $_{NP}$[±Count]] → $_{VCON}$[$_{e}$[Accomplishment]]

(89) Mereologizing rule:

$_{S}$[$_{VCON}$[Atelic,+Dur] + $_{PRT}$[+Telic]] → $_{DVCON}$[$_{e}$[Accomplishment]]

3.9 Summary

The preceding sections show that all five situation types are manifest in ASL, as in many other languages: states, activities, semelfactives, achievements and accomplishments. Each of the situation types is defined with respect to the same set of temporal features that characterize situation types in other languages: dynamism, duration and telicity. These features in turn are identified through various linguistic correlates.

States denote situations that remain unchanged. Accordingly, they lack dynamism (as well as agency behind any change) or duration over which a change could take place, as demonstrated by the fact that they are generally incompatible with imperatives, verbs of perception and elements modifying duration.

Activities denote events that have internal stages but no intrinsic endpoints. These properties are seen through a number of tests. In addition to passing the tests for dynamism, an essential feature of events, Activities are compatible with various elements that modify duration, and they are not compatible with NEED or with completive adverbials, which indicate telicity. They are however compatible with the particle STILL, revealing their atelic character.

Semelfactives are identified through several linguistic correlates: compatibility with imperatives which indicates dynamism; incompatibility with modifiers of duration, which reflects the lack of duration; and incompatibility with elements that assume telicity. While it is possible to identify semelfactives, there are relatively few examples.

Achievement verbs pass the tests for dynamism and telicity, but not for duration. They are compatible with imperatives and NEED, but not with modifiers of duration nor STILL. These tests taken together pinpoint to achievements as a distinct situation type.

Accomplishments denote processes or activities that culminate in a certain result. They contain all three temporal features: (i) dynamism, as seen through compatibility with imperatives, (ii) duration, as revealed by modifiers of duration, and (iii) telicity, as indicated through compatibility with NEED and completive adverbs, but not STILL.

Finally, there are several cases of coercion in which a verb constellation shifts from one situation type to another through the addition of a linguistic element like an adverbial, a particle, a verbal morpheme, or the use of the hold morpheme as a telic marker. Event sentences become state sentences by losing their dynamic feature. Semelfactives become Activities by adding a durative feature, and Activities become Accomplishments by adding a telic feature.

Chapter 4: Viewpoint Aspect

This chapter turns to the second part of the aspectual system, viewpoint aspect, and examines its expression in ASL. As mentioned in Chapter 1, situation type concerns the internal temporal properties of an eventuality, whereas viewpoint aspect shows how much of an eventuality is presented. Eventualities can be presented as single, complete wholes. Alternatively, the eventualities can be composed of multiple internal stages, and only some of these internal stages are presented. The two different ways of presenting an eventuality underlie the traditional distinction between the perfective and imperfective viewpoints.

In Comrie's (1976: 4) terms, the perfective "looks at the situation from outside, without necessarily distinguishing any of the internal structure of the situation" whereas the imperfective "looks at the situation from inside, and as such is crucially concerned with the internal structure of the situation." In Smith's (1997) terms, perfective viewpoint presents a situation in its entirety, according to its temporal schema, while imperfective viewpoint presents a part of the situation.

For example, the sentence in (1) has perfective viewpoint. The sentence presents the entire event of John's running to the store. This sentence would be used in a context where John leaves the house, crosses the street, and reaches the store. This is illustrated in the schema below the sentence. The notation I stands for the initial endpoint of a situation, and F for the final endpoint. The slashes indicate what is being viewed. Under perfective viewpoint, the whole event is viewed.

(1) a. John ran to the store.

b. General schema for perfective viewpoint (Smith 1997: 66)

I F

////////////////

On the other hand, the sentence in (2) has imperfective viewpoint. The sentence conveys just a part of the event of John's running to the store. For instance, it could be used in a context where John is crossing the street. In the schema below the sentence, the slashes indicate that only a part of the event of viewed.

(2) a. John was running to the store.

b. General schema for imperfective viewpoint (Smith 1997: 73)

I F

. . . ///// . . .

In addition to the perfective and the imperfective, Smith (1997: 77) defines a third viewpoint called neutral viewpoint. Under this viewpoint, the reading can be either bounded or unbounded, according to the temporal schema of the situation expressed in a clause. The theoretical rationale for having a neutral viewpoint is that, in the two-component theory of aspect, aspectual viewpoint is needed to make all or part of a situation semantically visible. If a clause has no overt viewpoint, it has the neutral viewpoint.

Neutral viewpoint is illustrated by contrasting English, which does not have it, with French, which does in the future and present tenses. In English, the sentence in (3a) is perfective based on the verb form. It can only have an inceptive reading meaning 'start to do X', i.e. John started to sing once Mary knocked on the door. The sentence in (3b) is imperfective due to the *-ing* morpheme. It cannot have an inceptive reading and only means that John was already singing at the time of Mary's knocking.

(3) English (no neutral viewpoint)

a. John sang when Mary knocked at the door. (perfective)

b. John was singing when Mary knocked at the door. (imperfective)

In contrast, French does not have an overt marker for perfective or imperfective in the future tense. In the sentence below, the readings normally associated with perfective and imperfective viewpoints are both available.

(4) French (neutral viewpoint with future tense)

Jean chantera quand Marie entrera dans le bureau.

'John will sing when Marie enters the office.'

'John will be singing when Marie enters the office.'

Languages thus vary with respect to viewpoint in several ways. First, they differ as to the particular viewpoints they mark. One viewpoint may be the default, and other viewpoints are marked. Second, they vary with respect to the details of the viewpoints they have. The definitions given above for perfective and imperfective are just general. Third, the expression of viewpoints differs, although the expression is almost always verbal, appearing either an inflection or as an auxiliary. Last, in some languages viewpoints interact with tense (French), in others they vary independently (English).

Given that languages vary in several respects regarding viewpoint, this chapter pursues the goal of understanding how viewpoint is encoded in ASL. Particular research questions include the following. First, how is perfectivity encoded in ASL? Second, how is imperfectivity encoded? Third, what is the viewpoint of a sentence if there is no overt marker for perfectivity or imperfectivity?

In answer to these questions, the chapter proposes the following picture of viewpoint in ASL. The language has two overt viewpoint morphemes. One morpheme marks perfective viewpoint, and it is the particle FINISH. The other morpheme marks a special case of imperfective viewpoint and is the conative morpheme. Other morphemes known in the ASL literature as aspectual (continuative, iterative and habitual) do not mark viewpoint; they belong to the situation type component. Sentences that do not have a viewpoint morpheme in ASL are zero-marked; they receive neutral viewpoint.

The chapter is structured as follows. Section 4.1 examines how perfectivity is encoded in ASL. It focuses on the morpheme FINISH and considers whether it indeed encodes perfective viewpoint. Section 4.2 turns to how imperfectivity is encoded in the language. It proposes that that there is an inflection for a marked imperfective viewpoint, the conative morpheme. Otherwise, there is no marker for the general imperfective. Finally section 4.3 discusses sentences that do not have either morpheme, i.e. zero-marked clauses, and suggests that they have neutral viewpoint.

4.1 Perfective viewpoint

As an introduction to the study of perfectivity in ASL, section 4.1.1 provides a working definition for the perfective, and contrasts it with the past and the perfect, which become relevant in later sections. Section 4.1.2 reviews the sign language literature on perfectivity in ASL. Some authors have proposed that FINISH marks perfectivity. The data show FINISH to appear in one of two positions, pre-verbal or clause-final. Section 4.1.3 presents the analysis of clause-final FINISH and considers whether the meaning of FINISH matches the temporal schema for perfective viewpoint, as opposed to the temporal schema for the past or the perfect. Section 4.1.4 then concentrates on pre-verbal FINISH and pursues a parallel question, i.e. whether it marks perfective, past, or perfect. Section 4.1.5 summarizes, and section 4.1.6 returns to some of the sign language literature and discusses remaining issues.

4.1.1 Working definitions

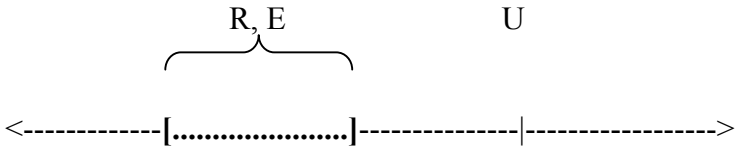
Here, a working definition is introduced for perfective viewpoint, along with definitions for past and perfect.

4.1.1.1 Working definition for perfective viewpoint

As introduced above, perfective viewpoint makes a situation semantically visible as a bounded whole (Smith 1997). Bounded, or closed, means that the initial and the final endpoints of the situation are seen, while they are not seen under an ‘unbounded’ or

'open' interpretation. This has already been illustrated in the temporal schema in (1b). Below are further examples of temporal schema that fit within the general schema in (1b). The square brackets indicate that the interval is closed, i.e. it contains the initial and final endpoints. Recall from Chapter 1 that R stands for reference time, U for utterance time and E for event time.[8]

(5) Perfective



The above temporal schemas simplify the relationship between reference time and event time, and are adopted as working definitions for the perfective. What is crucial for perfective meaning is that event time is bounded.

A complementary view of the perfective is provided by Giorgi and Pianesi (1997: 156), who suggest that the perfective indicates a "topologically closed event". There are three criteria for meeting this notion. First, an event described by an imperfective sentence (*John was walking*) must be part of an event described by a perfective sentence (*John walked*). Second, the event described by a perfective sentence cannot be smaller than an event described by another perfective sentence. Finally "if x and y are

[8] U is used instead of S, which is used in other terminology and stands for speech time; U includes both speech and sign. E roughly corresponds to situation time, which applies to both states and events; here the focus is on events and hence event time.

imperfective events and z is their sum, the perfective event corresponding to z is the sum of the perfective events corresponding to x and y".

The event time cannot include utterance time for the perfective, due to the Bounded Event Constraint (Smith and Erbaugh 2005: 716). Thus?, bounded events cannot be located in the present (although there are some possible counter-examples which I ignore here). This constraint is explored further in Chapter 5. The bounded interval otherwise appears before or after utterance time (U). Thus, the sentences *John ran* and *John will run* have perfective viewpoint. Perfective viewpoint does not decide whether the bounded event is before or after U; that relation is fixed by other factors such as temporal adverbs and pragmatic defaults, as described in Chapter 5.

The perfective viewpoint does not apply to stative situations in many languages. It follows that perfective viewpoint appears with event sentences only in these languages. Perfective clauses, which present bounded events, advance narrative time in default narrative contexts (Smith 2003: 94). This means that each successive bounded event introduces a new reference time within which the event takes place, as schematized in (6). In other words, a series of events occur one after another in order on a timeline. If perfective viewpoint bounds events, perfective clauses should result in narrative advancement.

(6) Temporal interpretation in narrative (Smith 2003: 94)

Continuity pattern:

E_1.....E_2.....E_3.....

$R_1 < U$ $R_2 > R_1$ $R_3 > R_2$

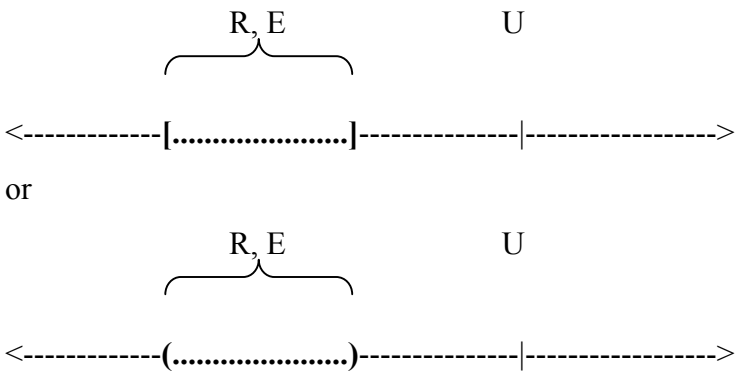
The working definition of perfective viewpoint is this: event time is bounded. To understand this definition better, the perfective is now contrasted with past tense and with the perfect. It is useful to have working definitions for the past and the perfect as well, since all three meanings are considered in section 4.1.2 as possible candidates for the

meaning of an lexical element in ASL that has been claimed to encode perfectivity, namely FINISH.

4.1.1.2 Working definition for past tense

Past tense encodes anteriority. For this dissertation, anteriority means that the reference time (R) for the event time (E) occurs before the time of utterance (U). This is schematized below. In the simplest cases, reference time and event time are equal. This sense is adopted as the working definition for the past. The schema is essentially that provided by Reichenbach (1947: 290) for the simple past, which conveys the perfective viewpoint in English.

(7) Past



The past tense applies both to states (*John was happy*) and events (*John ran*). Events can be open or closed, depending on the language. In English tense is independent of aspect, and past tense applies to all types of sentences. The first schema above illustrates the closed possibility, as shown by square brackets. For example, the sentence *John ran* is in the past tense and in the perfective viewpoint and says that the event of John's running is bounded and occurs before the time of the utterance. The second schema shows the open possibility, as signified by parentheses. The sentence *John was running*, which is in the past tense and is imperfective, means that an interval of John's running took place before the time of the utterance.

4.1.1.3 Working definition for perfect

There is another construction called the "perfect". The construction is expressed in English through the auxiliary *have*, as in the sentence *John has run*. Truth conditions for this sentence are similar to those for a simple past sentence like *John ran*. They both describe an event in the past. There are, however, important differences. For instance, the perfect is compatible with some adverbs and not others; the reverse pattern holds for past sentences.

(8) a. Perfect

i. Since 1990, John has run in the marathon.

ii. # Yesterday, John has run in the marathon.

b. Past

i. # Since 1990, John ran in the marathon.

ii. Yesterday, John ran in the marathon.

There have been three main approaches to characterizing the meaning of the perfect that distinguish it from the simple past. The first approach (the Anteriority theory) relates the distinction in terms of event time and reference time (Reichenbach 1947, Inoue 1989, Hornstein 1990, Klein 1992, 1994). Whereas the past places reference time (topic time in Klein's terminology) before utterance time, the perfect places event time before reference time. Note that the latter definition makes no reference to utterance time. Under the simple past reading, event time and reference time are equal, but under the perfect, the former precedes the latter. Utterance time can be before event time and reference time, which is future perfect (*I will have run*). Utterance time can be after event time and reference, yielding past perfect (*I had run*). Alternatively, utterance time can be at the same time as reference time, and both are after event time. This results in the perfect (*I have run*).

On the second approach (the Result State theory), the perfect means that the result state of the event holds at reference time (Moens and Steedman 1988, Parsons 1990, Kamp and Reyle 1993, Giorgi and Pianesi 1998). No such requirement holds under the past form, which still places reference time before utterance time.

Another approach (the Extended Now theory) states the meaning of the perfect in a different way: the event takes place within a time span that is continuous with the present (McCoard 1978, Dowty 1979, Mittwoch 1988, McCawley 1993, Vlach 1993, Iatridou, Anagnostopoulou, Izvorski 2003). The time span is not differentiated into 'then' and 'now'. Iatridou et al. define the perfect as in (9). The perfect asserts, not merely implies, that an eventuality occurs within an interval. The interval (the perfect time span) is defined in terms of a left boundary and a right boundary. The left boundary is fixed by an adverb or if there is no adverb, by the time of the event. The right boundary is defined by tense. In the case of the present perfect, this means the time of utterance. This definition of the present perfect captures McCoard's (1978) observation that the present perfect describes a past event in an interval that extends to the present. The definition is also consistent with Klein's (1992: 537) view that the perfect means that the topic time (= reference time R) is after the situation time (= event time E).

(9) Perfect:
There is an interval (the perfect time span) in/throughout which there is a bounded/unbounded eventuality. (Iatridou et al. 2003: 175)

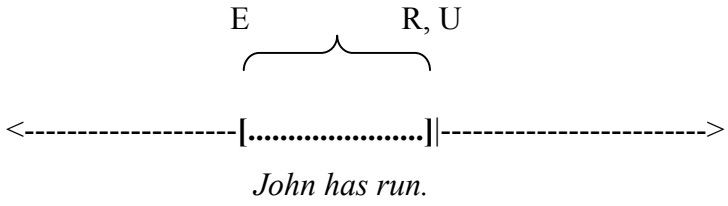
The perfect can have an 'existential' or 'universal' reading. On the 'existential' reading, the perfect time span properly contains the eventuality. That is, there is at least one instance of the eventuality which takes place in the time span. On the universal reading, the eventuality "fills up" the time span. Both senses are illustrated in (10). The universal reading usually requires an adverb to define the time span over which the eventuality unfolds, while the existential reading does not. Moreover, the existential reading includes one kind of perfect called the 'experiential' reading, on which the

subject has the experience of going through the event. The experiential reading for the above example then says that Bob has had the experience of being in Boston (at least since Tuesday).

(10) Since Tuesday, Bob has been in Boston.
Existential: Bob has been in Boston at least once since Tuesday.
Universal: From Tuesday through now, Bob has been in Boston continuously.

Iatridou et al.'s (2003) definition of the perfect is adopted as a working definition here. Under this definition, an event occurs in the time span that is by default defined by event time (otherwise by an adverb) on the left and by reference time on the right. In the present tense, reference time is also utterance time.

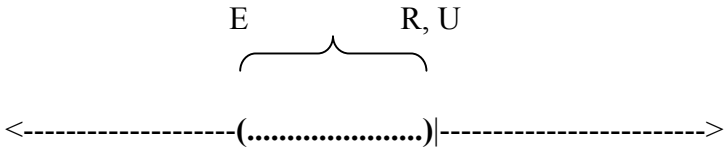
(11) Perfect, perfective viewpoint



The perfect is separate from viewpoint. The perfect may be combined with either perfective or imperfective viewpoint. As the English examples show, English allows both combinations.

The above example is under perfective viewpoint. The boundedness is due to perfective viewpoint, not the perfect morphology. Whereas perfective sentences often advance narrative time, perfect sentences, which are usually stative, do not have to. In addition, the perfect may be combined with imperfective viewpoint. If so, the interval is unbounded, as marked by parentheses.

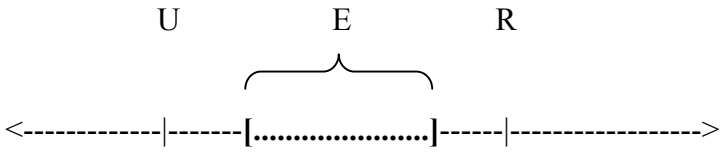
(12) Perfect, imperfective viewpoint



John has been running.

The perfect contributes temporal anteriority to RT. In some languages, e.g. English, it is independent of tense. In contrast to the perfect, tense focuses on the temporal relation between Utterance Time and RT. (Klein has a slightly different view: for him, aspect focuses on the relation between Topic Time and Event Time.) Thus past and future tense are possible with the perfect. The future perfect is illustrated below. Future tense means that reference time follows utterance time. The schema in (13) illustrates the case where event time begins after utterance time, but the future perfect is also compatible with cases where event time begins before utterance time.

(13) Future perfect, perfective



John will have run.

4.1.2 Sign language literature

Some studies of ASL have suggested that the language has a marker for perfective viewpoint, namely the sign glossed as FINISH. This section briefly reviews the studies that discuss the meaning of this sign.

4.1.2.1 Fischer and Gough (1999)

The use of the sign FINISH was first discussed by Fischer and Gough (1972/1999). They note that the sign has several uses as (i) as a main verb, (ii) as an

adjective, (iii) as an auxiliary, (iv) as a marker for perfective action but not for tense, (v) as a conjunction, and (vi) as an idiomatic expression meaning 'that's all' or 'enough!' Many of their examples show that FINISH appears after the verb. In fact, it often appears between clauses.

(14) Clause-final FINISH

a. YOU EAT **FINISH**, WE GO SHOPPING
'After you eat, we'll go shopping.' (p. 69)

b. BETTER FIRST PLAY T-O-Y **FINISH**, AFTER EAT YES
'You should play with your toys first; after that, we'll eat' (p. 69)

c. NEG MANY, BETTER ONE READ **FINISH**, PUT-AWAY, ANOTHER READ
'Not many [all at once]. You should read one, then put it away, and then you can read another one.' (p. 70)

Fischer and Gough (1999) also present examples where FINISH precedes the verb, although there are not as many examples as those with clause-final FINISH. The example in (15b) originally came without a gloss, which I have supplied myself.

(15) Pre-verbal FINISH

a. WHEN YOU **FINISH** EAT, WE GO SHOPPING
'When you've finished eating, we'll go shopping.' (p. 68)

b. YES, **FINISH** SEE-[it] (p. 76)
'Yes, I have seen it.'

They observe a difference between clause-final and pre-verbal FINISH. The subordinator WHEN is necessary with pre-verbal FINISH as in (15a). It is ungrammatical to leave out WHEN, as in (16). In contrast, WHEN is not necessary with clause-final FINISH, as in (14a).

(16) * YOU **FINISH** EAT, WE GO SHOPPING (p. 69)

In addition, they say that "FINISH as a perfective marker almost always comes after the verb" (p. 72). Friedman (1975: 952) concurs that FINISH is a perfective marker in ASL and indicates completed action. Her example is similar to that in (15a). However, Fischer and Gough also note in a footnote that "it is possible for a perfective - or at least a perfect - marker to occur before the verb as well" (p. 72).

4.1.2.2 Neidle, Kegl, MacLaughlin, Bahan and Lee (2000)

Aarons, Bahan, Kegl and Neidle (1992) label FINISH as a perfective marker in their example.

(17) JOHN **FINISH** EAT APPLE
'John has eaten the apple' (Aarons et al. 1992: 122)

In a later paper, Aarons, Bahan, Kegl and Neidle (1995) label FINISH as PERF-ASP without indicating whether it stands for perfective or perfect. This time, their examples show FINISH both before and after the verb. They are glossed as having the same meaning.

(18) a. JOHN **FINISH**/PERF-ASP EAT CORN
b. JOHN EAT+**FINISH**/PERF-ASP CORN
'John ate the corn (to completion).' (Aarons et al. 1995: 247)

In more recent work, Neidle, Kegl, MacLaughlin, Bahan and Lee (2000) indicate that FINISH is a lexical (as opposed to an inflectional) marker of aspect. They do not specify which aspect FINISH is marking. The example they supply not only shows pre-verbal FINISH, but also shows that it appears after the modal SHOULD.

(19) JOHN SHOULD **FINISH** READ BOOK
'John should have read the book.' (Neidle et al. 2000: 80)

4.1.2.3 Grose (2003)

Like other researchers, Grose (2003: 50) presents examples in which FINISH appears in either pre-verbal or clause-final position. He proposes that FINISH is a completive aspect marker. He takes completive aspect to be one type of 'Functional Aspect'. This refers to the node in the syntactic tree that is labeled Aspect, and completive aspect is placed under this node. A formal account is not given for the term "completive" but it appears to have pretty much the same meaning as the term "perfective" used here.

Grose observes that FINISH occurs with a head nod, notated as HN in the following examples. Either position is possible regardless of whether the event is in the past or in the present.

(20) a. ____HN
I READ BOOK **FINISH**

b. ____HN
I **FINISH** READ BOOK FINISH
'I finished reading the book.' (Grose 2003: 50)

Grose mentions a difference between pre-verbal and clause-final FINISH: pre-verbal FINISH cannot occur in sentences with a head nod, whereas clause-final FINISH requires it. Since his example above already shows pre-verbal FINISH with a head nod, this seems to mean that pre-verbal FINISH cannot occur in a sentence that has a head nod at the end.

In addition, Grose presents examples where a sentence containing FINISH at the end is followed by another sentence.

(21) a. _____br HN
MORNING EAT **FINISH** TV WATCH
'This morning when I finished eating, I watched TV'

b. _____br HN
READ BOOK **FINISH** GO STORE
'After I'm finished with this book, I'm going to the store.'

(Grose 2003: 68)

4.1.2.4 Janzen (1995, 1998, 2003)

Janzen (1995), cited in Janzen (1998: 112), recognizes that FINISH in ASL has two main senses: "the verb FINISH that takes an object or a complement clause, and a stative use, thus glossed as BE.FINISHED." These two main senses result in two sets of meanings, one lexical and the other grammatical. The lexical set of meanings include a main verb meaning 'to finish', an expletive meaning 'stop that', and a particle meaning 'that's all'. Under the set of grammatical meanings are a preverbal anterior (perfect), a clause-final completive and a conjunction meaning 'then' or 'and then'. The set of grammatical meanings is of interest here.

Janzen (2003) provides the following example of the clause-final (or clause-final) FINISH. In this sentence, FINISH expresses perfective viewpoint (completive aspect in Janzen's terms). Compare with the subsequent sentences in (23), which Janzen uses to exemplify the conjunction meaning of FINISH. For Janzen, perfective aspect means that

"the first action is completed; a second action takes place" (p. 4). In contrast, the conjunction means that "the first action is completed and so a second action follows it; the completion of the first action enables a second action to follow it" (p. 4).

(22) I OPEN DOOR, I THROW-OBJECT-FAR, FINISH-CLOSE-DOOR **[FINISH]**-nod, I SIT-DOWN

'I opened the door, threw (the lunch bag) out far and closed the door. I came back and sat down.' (Janzen 2003: 2)

(23) a. GO_{left} IX_{left} READ BOOK [**FINISH**]-top GO_{right} GYM O-R GO_{up} ROOF R-O-O-F IX_{up} PLAY OUT+
'We go read a book, and then go to the gym or out on the roof to play.'

b. GO RESTAURANT, EAT++ [**FINISH**]-top TAKE-ADVANTAGE SEE TRAIN ARRIVE
'We went to a restaurant and ate and then got a chance to go and see the train arrive.' (Janzen 2003: 2)

While Janzen (2003) proposes that FINISH is a conjunction, Janzen (1998: 104) presents examples in which two sentences are connected without FINISH, suggesting that FINISH is not necessary for fulfilling the role of a conjunction.

t whq

(24) PRO.1 ARRIVE HOME, PRO.1 MOTHER WORRY, WHY WHERE
'I got home, (and) I found my mother worried about where I had been.' (p. 103)

_____t

(25) PRO.1 ARRIVE, PRO.1 EXPLAIN HAPPEN

'I got home, (and) I explained what had happened.' (p. 104)

Moreover, Janzen (1998: 109) provides examples in which FINISH occurs as a connective between topics, rather than a connective between events.

_____t

(26) DH: IX(index finger) HISTORY, FINISH PUSH ASIDE

ND: 4('list') ----------[9]

'We have now discussed the first part, the history (of this project).'

_____t

DH: INDEX(middle finger) PROGRAM GOAL

ND: 4('list')

'The second part is the (discussion of) program goals.' (p. 109)

4.1.2.5 Summary

It is apparent from the sign language literature that FINISH occurs in one of two positions, clause-final or pre-verbal. The meaning of FINISH in each position has received various labels. For the clause-final position, the following labels have been suggested: perfective, completive and conjunction. In pre-verbal position, FINISH has been suggested either to have the same meaning as FINISH in clause-final position, and/or to mark perfect.

By providing a number of linguistic tests, I support the proposals that take clause-final FINISH to be a perfective marker and pre-verbal FINISH to be a perfect marker. The next section argues that clause-final FINISH marks perfective viewpoint, and then the following section argues that pre-verbal FINISH marks perfect.

[9] "4" refers to the handshape for "four" which spreads all four fingers and tucks in the thumb.

4.1.3 Clause-final FINISH

This section examines the precise meaning of clause-final FINISH by comparing it against the temporal schema for perfectivity, past, and perfect respectively.

4.1.3.1 Tests for perfectivity

The temporal schema of the perfective viewpoint, which bounds events, predicts two properties. First, perfective viewpoint does not appear with stative sentences. Second, perfective viewpoint allows narrative advancement, i.e. the reference times for a series of events follow one after another in order. It is shown here that these two properties apply to clause-final FINISH.

Clause-final FINISH does not appear with individual-level stative sentences. It has been independently shown in Chapter 3 that the following sentences (when FINISH is removed) are individual-level stative. The awkwardness of these sentences is explained by the fact that individual-level states do not have bounds, which is at odds with the boundedness property of FINISH.[10]

(27) a. ? JOHN KNOW HISTORY **FINISH**
'John knew history.'

b. ? JOHN LIKE CHOCOLATE **FINISH**
'John liked chocolate.'

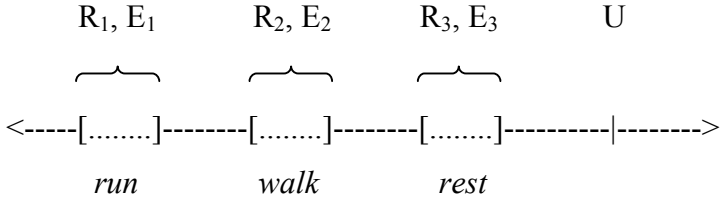
In addition, clause-final FINISH induces narrative advancement. The temporal order of the events described in the sentence below is unambiguous. The order of the events is the same as the order in which they are listed. Thus its temporal schema is as in (28a): the first reference time (R_1) which coincides with the first event time (E_1 =

[10] On the other hand, clause-final FINISH is fine with stage-level statives, since stage-level statives may have extrinsic bounds provided by an adverb, as in LAST-YEAR JOHN BE-SICK FINISH 'John was sick last year.'

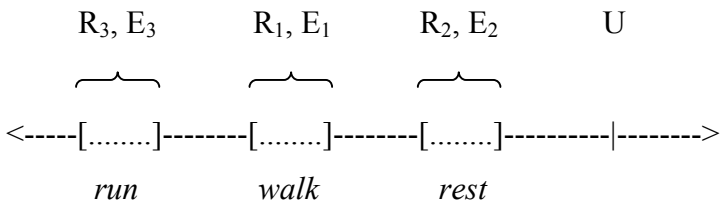
running) is necessarily advanced to the second reference time R_2 (which coincides with the second event time E_2 for walking) and then to the third reference time R_3 (which is the same as the third event time E_3 for resting). The sentence cannot have the temporal schema in (28b), in which the order of the events is different: resting, and then running and then walking.

(28) JOHN RUN **FINISH**, WALK **FINISH**, REST.
'John ran, and then walked, and then rested.'

a. ok



b. *



It is sufficient to use clause-final FINISH once, at the very end of the sentence as in (29), with the meaning remaining the same as in (28a). In contrast, a sentence without FINISH allows either temporal schema illustrated above. Sentence (30) is true in a situation where John rested, and then ran and then walked. It is also true in a situation where the order of the events is anything other than that given in the sentence. Sentences with final FINISH then advance narrative time, while sentences without clause-final FINISH do not advance narrative time, thus presenting a second argument that clause-final FINISH is a perfective marker.

(29) JOHN RUN, WALK, REST **FINISH**
'John ran, and then walked, and then rested.'

(30) JOHN RUN, WALK, REST.
'John ran, walked, and rested.'

The analysis of clause-final FINISH as a perfective marker accounts for the examples discussed by Janzen (1998). In (23), repeated below as (31), FINISH bounds the event of reading a book in (a) and eating in (b) respectively. This makes it possible to advance the reference time for the next event, i.e. going to the gym or playing on the roof in (a) and seeing the train arrive in (b).

(31) a. GO_{left} IX_{left} READ BOOK [**FINISH**]-top GO_{right} GYM O-R GO_{up} ROOF R-O-O-F IX_{up} PLAY OUT+
'We go read a book, and then go to the gym or out on the roof to play.'

b. GO RESTAURANT, EAT+++ [**FINISH**]-top TAKE-ADVANTAGE SEE TRAIN ARRIVE
'We went to a restaurant and ate and then got a chance to go and see the train arrive.' (Janzen 2003: 2)

The perfectivity analysis also explains how FINISH is used to move from one topic to another in (26), repeated below as (32). The construction involves a "list buoy" (Liddell: 224). List buoys are used to make associations with ordered or unordered sets of entities. "The associations between entities and digits (= the thumb and the fingers of the nondominant hand) are generally made by contacting the tip of the appropriate digit and describing the entity to be associated with it." The entity in question can be an event. FINISH contributes order to the list by bounding the description of one event and thereby allowing the signer to move on to the next event on the list. In the particular example,

FINISH bounds the event of discussing history so that it becomes possible to advance to the next event, namely pushing it aside and then moving on to the next event, i.e. discussing the topic of program goals.

(32) _____t
DH: IX(index finger) HISTORY, FINISH PUSH ASIDE
ND: 4('list') ----------
'We have now discussed the first part, the history (of this project).'

_____t
DH: INDEX(middle finger) PROGRAM GOAL
ND: 4('list')
'The second part is the (discussion of) program goals.' (Janzen 1998: 109)

The example in (33) similarly involves advancement a topic to a comment on the topic. In the example, FINISH functions to complete the introduction of the topic ("ASL exercises"), thereby allowing the rest of the sentence to comment on the topic.

(33) _____t
ALL $FOCUS_a$ ASL FINISH[11]
'These (exercises) are all about ASL'

_____t
THAT BASIC gesture('what') SKILL B-T-S
'which are the basic "Building Translation Skills"' (Janzen 1998: 114)

[11] Janzen's original gloss uses BE.FINISHED, which has been changed to FINISH here for the sake of consistency.

4.1.3.2 Tests for past

The temporal schema for past shows that the reference time (which is equal to event time) is before utterance time. Comparison of the sentences in (34) suggests at first sight that the temporal schema for past applies to that for clause-final FINISH. As indicated by the glosses, the sentence in (34a) has two possible readings. The sentence can receive a generalized, habitual reading, i.e. a pattern of situations. As explained in Chapter 3, section 3.8.2, an event sentence may be coerced as a generalizing sentence. The other reading is that the event of Mary's working took place in the past. On the other hand, the sentence in (34b) only has the past reading. It does not have the generalizing reading.

(34) a. MARY WORK
'Mary works (in general).'
'Mary worked.'

b. MARY WORK **FINISH**
'Mary worked.'

The question is, does FINISH contribute anteriority, i.e. does reference time precede utterance time? This section suggests no, for two reasons. First, FINISH is not required in contexts where a past reading is already clear. The sentence in (35a) indicates that a past temporal adverb like YESTERDAY already establishes the anteriority of the reference time (equal to situation time here) to the utterance time, so that the resulting interpretation is that the event takes place in the past. This is further detailed in Chapter 5. The meaning is not affected if FINISH is inserted, as in (35b). The translation remains the same, suggesting that FINISH does not directly contribute anteriority; rather, it comes from the adverb.

(35) a. YESTERDAY MARY WORK
'Yesterday Mary worked.'

b. YESTERDAY MARY WORK **FINISH**
'Yesterday Mary worked.'

The second reason that FINISH does not contribute anteriority, i.e. absolute pastness with respect to utterance time, is that FINISH can appear with future temporal adverbs like TOMORROW. If FINISH were a marker of past, it should be incompatible with TOMORROW, but this is not the case. Consider the sentences in (36) in this context: two friends are discussing plans for the next day; there is a party and they discuss what John will be doing for the party. In (36a), the order of events is fixed: cooking the salmon precedes making the dessert. When the sentence does not contain FINISH, the order of the events is no longer fixed. This means that FINISH induces narrative advancement. It does so by bounding the event, so that any event that is described next is understood to follow temporally the first event. Thus, the reference time of the second event depends on the reference time of the first event and not on utterance time. This explains why the series of events can be situated in the future and not necessarily in the past.

(36) a. TOMORROW JOHN$_i$ COOK S-A-L-M-O-N **FINISH**,
e_i MAKE DESSERT
'Tomorrow, after John cooks the salmon, he will make the dessert.'

b. TOMORROW JOHN$_i$ COOK S-A-L-M-O-N,
e_i MAKE DESSERT
'Tomorrow, John will cook the salmon and make the dessert.'

Going back to (34b), why does a sentence with clause-final FINISH have a past reading by default? The past reading is due to a pragmatic constraint, specifically the Bounded Event Constraint (Smith 2003). This constraint predicts the interpretation of a bounded event to be in the past. If FINISH contributes perfectivity, not anteriority, the default past reading is explained. At the same time, the perfectivity of FINISH explains why the sign is not necessary in contexts of pastness and why the sign appears with future-oriented temporal adverbs. The Bounded Event Constraint constraint receives further discussion in Chapter 5.

4.1.3.3 Tests for perfect

Another possibility is that FINISH is a perfect marker. If this is correct, the temporal schema for the perfect predicts that sentences with FINISH can describe open or unbounded events. The perfective, which bounds events, and the perfect then predict different possibilities for what pragmatically may follow a sentence with FINISH. Three examples are tested below.

First, consider the example uttered by Signer A in (37). If FINISH contributes perfectivity, the event of John's running should be bounded. Then it would be felicitous for Signer B to respond by commenting on John's state as a result of his running. This is shown to be the case in (38). If FINISH were a perfect marker, the sentence in (37) could be interpreted as meaning that John has had the experience of running in the past. Within that context, it would not be pragmatically odd for the Signer B to support that statement by saying that John will be running in the next marathon. As shown in (39), this is pragmatically odd, thus suggesting that FINISH has a perfective function.

(37) Signer A:
JOHN RUN 30 M-I-L-E **FINISH**
'John ran 30 miles.'

(38) ok Signer B:

_____head nod

TRUE NOW IX EXHAUSTED

'True, now he is exhausted.'

(39) # Signer B:

_____head nod

YES, IX LOOK-FORWARD MARATHON TOMORROW

'Indeed, he is looking forward to the marathon tomorrow.'

A second example is presented in (40). If FINISH were a perfective marker, it would be natural in a context where Signer A was explaining what he did in the morning on that day, and then Signer B responded with a query as to what Signer A did after going to school. Then Signer A could respond, for example, by saying that he dropped off mail at the post office. This is the case, as seen in (41). FINISH would not be natural in a context where Signer A wanted to inform Signer B that Signer A had been to school earlier in his life, and then Signer B replied by asking what Signer A majored in. This is illustrated in (42). However, Signer B's response in (42) would be felicitous if FINISH were a perfect marker.

(40) Signer A:

(MORNING) I GO SCHOOL **FINISH**

'(This morning), I went to school.'

(41) ok Signer B:

___whq

NEXT pro DO-DO

'And then what did you do next?'

(42) # Signer B:

_____whq

MAJOR WHAT

'What did you major in?'

A similar example follows in (43). If FINISH marks perfective viewpoint, the meaning would be that I cooked a particular piece of salmon. Then it should be pragmatically felicitous for Signer B to respond by saying that he can indeed smell the cooked salmon, as shown in (44). In contrast, FINISH would be pragmatically odd in a context where Signers A and B were discussing what to prepare for a party, and Signer A wanted to let Signer B know that Signer A had experience cooking salmon in the past, and then Signer B would say in response 'Great, why don't you go ahead and cook salmon for the party?' However, that usage would be fine if FINISH marked perfect. The example in (45) reveals this usage to be odd, thus pointing to FINISH as a perfective marker.

(43) Signer A:

I COOK S-A-L-M-O-N **FINISH**

'I cooked salmon.'

(44) ok Signer B:

_____head nod

YES, pro SMELL S-A-L-M-O-N. GOOD

'Yes, I smell salmon. It smells good!'

(45) # Signer B:

_____y/n

GOOD, DO-YOU-MIND COOK S-A-L-M-O-N

'Good, do you mind cooking salmon (for the party)?'

The example in (37) contains an atelic verb constellation, while the last two examples, i.e. (40) and (43), contain telic verb constellations. The results are the same for all of the examples, i.e. contexts in which FINISH is understood as a perfective marker fit the examples naturally. Thus, it does not matter whether the verb constellation is atelic or telic. This is a desirable result: as a viewpoint morpheme, FINISH should appear with events regardless of their situation type.

4.1.4 Pre-verbal FINISH

All of the above examples feature FINISH in clause-final position. FINISH may also appear in pre-verbal position, as illustrated below. As the gloss shows, the reading is one of the perfect. The next three subsections examine the meaning of pre-verbal FINISH by determining whether it fits the temporal schema for perfective, past, or perfect. They ultimately show that the meaning fits the temporal schema for perfect.

(46) JOHN **FINISH** CLEAN ROOM
'John has cleaned the room.'

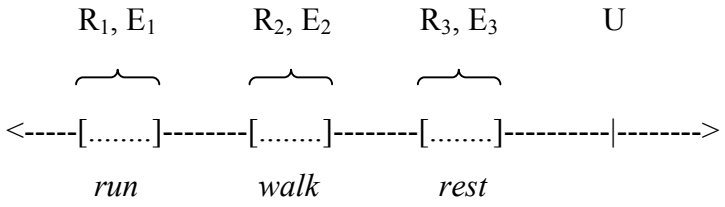
4.1.4.1 Test for perfectivity

As noted above, the temporal schema of the perfective viewpoint predicts that it induces narrative advancement. Here, it is shown that with pre-verbal FINISH, narrative advancement can occur but is not required. The temporal order of the events described in (47) is neutral. The order of the events can be the same as the order in which they are listed, i.e. the sentence is true in a situation where John ran first, and then walked and then rested. Thus (47) is compatible with the temporal schema shown in (47a). The sentence also receives an 'unordered list' reading, in which the order of events does not matter. Thus the sentence would be true, for example, in a situation where John rested, and then ran and then walked. The temporal schema for this version is in (47b). However

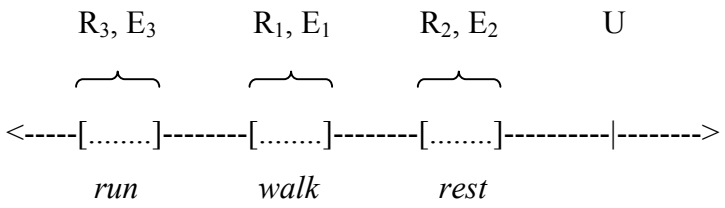
that is just one possibility under the unordered list reading; the sentence would be true in every situation where the order of the events is different.

(47) JOHN **FINISH** RUN, WALK, REST.
'John has run, walked, and rested.'

a. ok



b. ok



The above example involves atelic verb constellations. An interpretation that is neutral with respect to the temporal order of the events is also possible with telic verb constellations. Thus, it does not matter whether the verb constellations are atelic or telic. Sentences with pre-verbal FINISH can advance narrative time but do not have to.

(48) JOHN **FINISH** DRAW-CIRCLE, WRITE PAPER, REST
'John has drawn a circle, written a paper and rested.'

In the discussion of clause-final FINISH, another property of perfectivity was also tested: inability to appear with stative sentences. For pre-verbal FINISH, the discussion of this property is deferred to subsection 4.1.4.4.

4.1.4.2 Tests for past

The temporal schema for past indicates that the reference time (which is equal to event time) precedes utterance time. The gloss for a sentence with pre-verbal FINISH is in the past, as in (49). To determine whether pre-verbal FINISH contributes pastness, it is necessary to show that it is required in contexts of pastness and that it cannot co-occur with future temporal adverbs. This section shows that neither is the case for pre-verbal FINISH.

(49) MARY **FINISH** WORK
'Mary has worked.'

Contexts of pastness are made clear by a past temporal adverb like YESTERDAY. Without FINISH, a sentence with YESTERDAY is already understood as being in the past. Thus adding pre-verbal FINISH is not necessary to get a past reading. What pre-verbal FINISH contributes to the meaning of (50b) is to assert that the event took place within a time span, which is the temporal schema for the perfect; this is supported in the next subsection.

(50) a. _____t
JOHN$_b$ IX$_b$ YESTERDAY MARY$_a$ $_a$INFORM$_b$
'Mary informed John (of the news) yesterday.'

b. _____t
JOHN$_b$ IX$_b$ YESTERDAY MARY$_a$ **FINISH** $_a$INFORM$_b$
'Mary has informed John (of the news) yesterday.'

If pre-verbal FINISH is a marker of pastness, it should not appear with temporal adverbs that locate the eventuality in the future, i.e. after utterance time. Yet the following example shows that pre-verbal FINISH is fine with a future-oriented adverb

like NEXT-WEEK. Since pre-verbal FINISH is not required in a context of pastness, and since it appears with future adverbs, the possibility that pre-verbal FINISH is a past tense marker is eliminated.

(51) I HOPE NEXT-WEEK MARY (WILL) **FINISH** LECTURE CONFERENCE$_a$ IX$_a$
'I hope that Mary will have lectured at that conference next week (so that she can move on with other things).'

4.1.4.3 Tests for perfect

If pre-verbal FINISH is a perfect marker, a sentence with this particle should assert that there is a time span within which an event has taken place, according to the temporal schema of the perfect. It does not matter whether the event is open or closed. Thus, sentences with pre-verbal FINISH should fit contexts where the event is open. This is seen through the following three examples.

If preverbal FINISH in (52) is interpreted as a perfect marker, the reading must be that John has had the experience of running before. This reading is natural in a context where a friend is telling a story about John's athletic abilities, including his running experience. It should be fine to respond with a supporting statement that John, as an experienced runner, will join the marathon, as shown in (54). It is also natural to use (52) in a context where there is a specific bounded event of John's running, as seen in (53).

(52) Signer A:
JOHN **FINISH** RUN 30 M-I-L-E.
'John has run 30 miles.'

(53) ok Signer B: (based on closed reading of (52))
_____head nod
TRUE NOW IX EXHAUSTED
'True, he now looks exhausted.'

(54) ok Signer B: (based on open reading of (52))

_____head nod

SO, TRUE IX LOOK-FORWARD JOIN MARATHON

'Indeed, he is looking forward to joining the marathon.'

The next two examples make a similar point. The sentence in (55) can be used to convey that one has been to school before. Thus it is felicitous to ask what Signer A's degree was in, as illustrated in (57). It is also pragmatically fine to enquire what Signer A did next. This is shown in (56).

(55) Signer A:

I **FINISH** GO SCHOOL

'I have gone to school.'

(56) ok Signer B: (based on closed reading of (55))

___whq

NEXT pro DO-DO

'And then what did you do next?'

(57) ok Signer B: (based on open reading of (55))

_____whq

MAJOR WHAT

'What did you major in?'

Similarly, the sentence in (58) can be used to say I cooked salmon for, say. that evening's dinner. Then it is felicitous to comment on the smell of the cooked salmon, as shown in (59). In addition, the sentence in (58) can mean that I have prior experience in cooking salmon. This reading is often accompanied by a particular non-manual (squeezed

eyes, head nod and smile) asserting that the subject has the property in question. Accordingly, it is appropriate also for Signer B to ask whether I can cook salmon for an upcoming party, as seen in (60).

(58) Signer A:
I **FINISH** COOK S-A-L-M-O-N
'I have cooked salmon.'

(59) ok Signer B: (based on closed reading of (58))
_____head nod
YES, pro SMELL S-A-L-M-O-N. GOOD
'Yes, I do smell salmon. It smells good!'

(60) ok Signer B: (based on open reading of (58))
_____y/n
GOOD, DO-YOU-MIND COOK S-A-L-M-O-N
'Good, do you mind cooking salmon (for the party)?'

A perfect marker in ASL is neutral with respect to whether an event is bounded or not. It follows that it should not matter whether the perfect marker appears with an atelic or a telic verb constellation. This is the case for pre-verbal FINISH, as it appears with an atelic verb constellation in (52) and with a telic verb constellation in (55) and (58).

4.1.5 Summary

Several tests reveal clause-final FINISH to be consistent with a temporal schema in which the event is bounded. First, clause-final FINISH is not compatible with individual-level stative sentences, since individual-level states are not bounded. Second, clause-final FINISH induces narrative advancement - one bounded event advances the reference time for the next event. In addition, other possible meanings are ruled out.

Clause-final FINISH cannot be a past tense marker, because it does not have to appear in contexts of pastness, and it can appear with future-oriented temporal adverbs. Clause-final FINISH also cannot be a perfect maker, because it does not fit contexts where the event is open; rather it only fits contexts where the event is closed. Based on these facts, clause-final FINISH is concluded to be a perfective viewpoint morpheme.

It has been shown that pre-verbal FINISH can induce narrative advancement but does not have to. Pre-verbal FINISH is consistent with a past reading but it may also be consistent with a future reading. Moreover, pre-verbal FINISH fits contexts that are consistent with both a closed and open reading of the sentence. It is concluded from these facts that pre-verbal FINISH marks perfect. A perfect sentence can be perfective, in line with Fischer and Gough (1999: 72), but it does not have to be, as seen in the examples that have an open interpretation. The perfect asserts that the event takes place within a time span. By default, this time span extends from the time of the event to the present, which explains the default past reading. The time span may also be placed in the future, which explains why pre-verbal FINISH as a perfect marker is compatible with a future temporal adverb.

4.1.6 Discussion

Thus far, clause-final FINISH is shown to mark perfective viewpoint, while pre-verbal FINISH marks perfect. I now discuss this conclusion in light of Janzen's (1998, 2003) approach to FINISH. Afterwards, I discuss another issue: is the hold morpheme a viewpoint morpheme for the perfective? I also discuss two issues regarding pre-verbal FINISH and stativity: the stative nature of sentences with pre-verbal FINISH and the incompatibility of pre-verbal FINISH with stative sentences.

4.1.6.1 FINISH as a conjunction?

Both approaches are in agreement that FINISH functions as a perfective marker. (Janzen uses the term 'completive marker'.) Janzen's approach, motivated by information ordering (as in ordering old information before new information), takes the further step

that FINISH is grammaticized as a conjunction. My approach, taking event structure as a point of departure, maintains that FINISH is a perfective marker in the cases where Janzen analyzes it as a conjunction.

Janzen presents two points in favor of his approach. First, as a conjunction, FINISH (more precisely BE-FINISHED) is a highly reduced token of a clause which serves as a connective (Janzen 1998: 115). In other words, "FINISH is a grammaticized form of the stative clause BE-FINISHED, which has . . . been decategorialized in that it does not take its own subject . . . , although retention is still the case because the full clause (pronoun + BE-FINISHED) is still in evidence in ASL" (Janzen 1998: 176). The clause from which FINISH is derived is illustrated in (61). Janzen's (1998: 115) path of derivation from (61) to a conjunction is presented in (62).

(61) WHAT'S UP, GO.TO RESTAURANT pause EAT+cont
'So then, we went to a restaurant, ate

_____t
PRO.1 BE-FINISHED
and once we were finished

TAKE.ADVANTAGE SEE TRAIN ARRIVE
got to see the train arrive.' (Janzen 1998: 116)

(62) i. X, given that we understand X to have taken place, Y (which becomes)
ii. X, given X, Y (which then becomes)
iii. X, then/because/but/(etc.), Y

There are three parts in (61): first is a series of events (going to the restaurant and eating), then the clause PRO.1 BE-FINISHED, and then another event (seeing the train arrive). The clause with BE-FINISHED can be explained under both approaches. Under

Janzen's approach, BE-FINISHED is a perfective marker and represents an intermediary stage between a main verb and a conjunction. On my approach, it is a perfect marker. It follows that the clause describes a state of being finished which has as its reference time the event time of eating.

Janzen raises a second point to support his analysis: topic marking occurs over the sign FINISH, as illustrated in (63). Topic marking is nonmanual and appears as a brow raise. His interpretation of the topic marking is that FINISH serves as a topic for the second sentence (i.e. the clause starting with TAKE-ADVANTAGE). On the contrary, my analysis suggests that FINISH appears at the end of the first sentence. It occurs with a head nod along with the topic marking, and the head nod can spread over the rest of the first sentence, as Grose (2003) notes (see example 21). The entire first sentence (including FINISH) then serves as a topic for the next sentence. Janzen also recognizes that a head nod appears with FINISH but only if it is used as a perfective marker, which takes us back to the idea that FINISH is a perfective marker.

(63) GO RESTAURANT, EAT+++
'We went to a restaurant and ate,

[**FINISH**]-top TAKE-ADVANTAGE SEE TRAIN ARRIVE
'and then got a chance to go and see the train arrive.' (Janzen 2003: 2)

I offer three further arguments that FINISH occurs at the end of the first sentence, rather than serving as a topic to the second sentence. First is the distribution of eye gaze. Eye gaze is one of several prosodic markers used by ASL and is useful for probing the syntactic structure of a sentence. One way to render (63) is to add eye gaze. First, eye gaze would be directed to an imaginary spot, say, on the right side of signing space. While eye gaze is directed toward this spot, the first sentence is articulated. Crucially eye gaze is still directed toward the same spot when FINISH is signed, as shown in (64). This suggests that FINISH is grouped with the first sentence. Then eye gaze is shifted to

another imaginary spot, this time, on the left side of signing space. While eye gaze is directed toward the left side, the second sentence is signed.

(64) _____brow raise, eye gaze: right
_____head nod
GO RESTAURANT, EAT+++ FINISH,
'We went to a restaurant and ate,

_____eye gaze: left
TAKE-ADVANTAGE SEE TRAIN ARRIVE
'and then got a chance to go and see the train arrive.'

The distribution of eye gaze is similar with the list buoy seen in (32): eye gaze is directed toward one of the fingers and remains in the same place while FINISH is articulated; only then eye gaze may be shifted to the next finger. In these cases, Janzen's approach would say that FINISH functions as a completive marker.

A second argument for FINISH appearing at the end of the first sentence is that FINISH may be followed by a conjunction like T-H-E-N. as shown in (65). The sentence is a second way to render (63) without affecting the meaning much. NOW can also be used instead of T-H-E-N in certain contexts. If T-H-E-N or NOW serves as a conjunction, that leaves the possibility that FINISH is a perfective marker (or a completive marker in Janzen's terms).

(65) GO RESTAURANT, EAT+++ FINISH,
'We went to a restaurant and ate,

T-H-E-N TAKE-ADVANTAGE SEE TRAIN ARRIVE
'and then got a chance to go and see the train arrive.'

Yet another argument in favor of FINISH as a perfective marker appearing at the end of the first sentence is that it is not always necessary to use FINISH when there are two clauses, which were shown in (24) and (25), repeated below as (66) and (67). ARRIVE is an achievement and therefore telic. Telic verb constellations tend to be perfective by default, as explained further in section 4.3. Since they are already perfective by default, it is not necessary to insert FINISH. Janzen's account can be salvaged if the conjunction is said to be covert.

(66) PRO.1 ARRIVE HOME, PRO.1 MOTHER WORRY, WHY WHERE
t whq
'I got home, (and) I found my mother worried about where I had been.'
(Janzen 1998: 103)

(67) PRO.1 ARRIVE, PRO.1 EXPLAIN HAPPEN
t
'I got home, (and) I explained what had happened.' (Janzen 1998: 104)

While both approaches agree that FINISH is a perfective marker, they have different points of departure (information ordering and aspectual structure respectively) which make different predictions about whether FINISH is syntactically part of the first sentence, or part of the second sentence, or in between. The different predictions need to be tested with further detailed prosodic analyses of brow raise (for topic marking) eye gaze, and head nod.

The evidence adduced above shows clause-final FINISH to be a perfective marker. The main function of clause-final FINISH is to bound an event. Bounding one event makes it possible to narrate the next event. This means that the functions of perfective aspect and conjunction can complement each other.

This conclusion has consequences for the path of grammaticization for FINISH. Janzen (2003) has proposed the following path of grammaticization. FINISH starts as a

main verb, then becomes a perfective marker and finally becomes a conjunction, as seen in (68). Since I group the perfective and conjunction functions together as perfective, I suggest an alternative path of grammaticization in (69).

(68) Janzen's (2003) path of grammaticization for FINISH:
main verb --> perfective --> conjunction

(69) Proposed path of grammaticization for FINISH:
main verb --> perfective --> perfect

The proposed path has the advantage of accounting for the fact that the perfect, being a later development, has a narrower meaning: whereas perfective viewpoint bounds an event, the perfect takes the meaning further by asserting the event occurred in a certain time span. The proposed path of grammaticization for ASL is a classic path of historical development (Fleischman 1983, Bybee and Dahl 1989, among others). For example, it is parallel to what Lindfors (2003) has suggested for the grammaticization of the perfect in Swahili. In this language, there is an ancient lexical word *meele* 'to finish', from which the *me*-marker is derived (Heine and Reh 1984). Lindfors suggests that while a completive sense remains in the usage of the *me*-marker, it is used as a perfect marker.

(70) Lindfors' (2003: 39) path of grammaticization for perfect in Swahili
"finish" --> completive --> perfect
meele *me-* *me-*

Therefore, on the basis of the preceding analysis and discussion, clause-final FINISH encodes perfectivity while pre-verbal FINISH marks perfect.

4.1.6.2 Is the hold morpheme a perfective viewpoint morpheme?

Sentences with the hold morpheme like the one in (71) have closed readings. The question is, is the hold morpheme a perfective viewpoint morpheme? There are two reasons to maintain the view from Chapter 3 that the hold morpheme falls under situation type. First, it does not interact with all situation types. It is restricted to a set of verbs (e.g. some classifier predicates and others 'spatial' verbs), all of which have the durative feature. It functions to contribute telicity to these verbs. Since these verbs are activities, the hold morpheme coerces them into accomplishments via the Telic Rule, as stated in Chapter 3, (84). In contrast, FINISH appears with all event verb constellations. Second, the hold morpheme does not provide a bounded view of an event so much as it provides an endpoint to the event. Thus while narrative advancement is logically possible, the hold morpheme is not used for that purpose. FINISH is more commonly used in contexts that involve narrative advancement.

(71) BOAT VEHICLE-CL+MOVE+hold
'A boat moved and came to a stop.'

As explained in section 4.3.3.1, a pragmatic principle (the Temporal Schema Principle) accounts for the fact that sentences with the hold morpheme receive a bounded interpretation by default. This principle says that telic verb constellations receive a default bounded reading by virtue of their bounded temporal schema . Thus it is not necessary to count the hold morpheme as a perfective viewpoint morpheme.

4.1.6.3 Stative nature of sentences with pre-verbal FINISH

A sentence with pre-verbal FINISH can have the flavor of an individual-level stative. Recall from the working definitions that there are two types of perfect, existential and universal. One type of existential perfect is the experiential perfect. The meaning of the experiential perfect is such that the subject has had the experience of going through the event described by the sentence. Experiential perfect is one type of existential

perfect. It is this sense that is most apparent with a sentence containing pre-verbal FINISH.

(72) ____rhq
I FINISH LIVE WHERE HAMBURG
'I have lived in Hamburg (before).'

When an adverb like 10 YEAR 'for ten years' is added, the universal reading emerges in addition to the existential reading. On the existential reading, the 10-year interval can occur anywhere between the time of birth and the present. On the universal reading, the 10-year interval is the one that leads up to the present. It occurs naturally in a context where the speaker has just moved out of Hamburg in the morning.

(73) I FINISH LIVE HAMBURG 10 YEAR
a. ok 'I have lived in Hamburg for 10 years.' (existential)
b. ok 'I have lived in Hamburg for the past 10 years.' (universal)

While pre-verbal FINISH allows both existential and universal readings in the above context, there is one context in which pre-verbal FINISH seems to allow only the existential reading. Pre-verbal FINISH is not compatible with the phrase SINCE 10 YEAR, as shown in (74a). Instead there is a preference to omit pre-verbal FINISH from the sentence, as in (74b). This can explained if SINCE 10 YEAR triggers only a universal reading and pre-verbal FINISH allows only an existential reading in the context of SINCE 10 YEAR. There is then a weak contrast between the existential and universal readings.

(74) a. ? SINCE 10 YEAR I FINISH LIVE AUSTIN
'Since 10 years ago, I have lived in Austin.' (existential)

b. ok SINCE 10 YEAR I LIVE AUSTIN
'For the past 10 years, I have lived in Austin.' (universal)

As support for the individual-level stative reading of sentences with pre-verbal FINISH, they are awkward with the continuative and iterative morphemes, as shown in (75). One explanation for the awkward nature of these sentences is that there is a clash between pre-verbal FINISH and the continuative and iterative morphemes: pre-verbal FINISH is a perfect marker and can lend an individual-level stative reading to the sentence. Yet, as shown in Chapter 3, the continuative and iterative morphemes do not appear with individual-level statives.

(75) a. ? JOHN FINISH COOK+continuative
'John has cooked continuously.'

b. ? JOHN FINISH COOK+iterative
'John has cooked many times.'

4.1.6.4 Incompatibility of pre-verbal FINISH with stative sentences

The next issue concerns the interaction between pre-verbal FINISH and individual-level stative sentences. Pre-verbal FINISH is similar to clause-final FINISH in that neither is compatible with an individual-level stative sentence, as shown in (76). Instead, as demonstrated in (77), the sign FORMERLY is used, say, in a context where John experiences a brain trauma and loses his knowledge of history, and the sentence says that he used to know much about history. Likewise, in (77b), FORMERLY is used rather than FINISH to talk about a context where John used to like chocolate in the past but not anymore.

(76) a. # JOHN **FINISH** KNOW HISTORY
'John has known history.'

b. # JOHN **FINISH** LIKE CHOCOLATE
'John has liked chocolate.'

(77) a. JOHN **FORMERLY** KNOW HISTORY
'John used to know history.'

b. JOHN **FORMERLY** LIKE CHOCOLATE
'John used to like chocolate.'

The incompatibility of clause-final FINISH with individual-level stative sentences was explained as follows: clause-final FINISH as a perfective marker semantically bounds events, an option which does not apply to individual-level states. Note that semantic bounds are different than extrinsic bounds which are made explicit by an adverb or a clause and which are possible with states. If pre-verbal FINISH functions as a perfect marker which lends an individual-level stative reading to a sentence that is already an individual-level stative, pre-verbal FINISH appears pragmatically redundant.

4.2 Imperfectivity

This part of Chapter 4 deals with the question of whether ASL has morphemes that encode imperfectivity. Since imperfective is the natural counterpart to perfective, it's natural to think that it is encoded somehow in ASL. To my knowledge, no one in the sign language literature has proposed an imperfective marker for ASL.

This section considers several potential candidates for imperfective markers, since they seem to come close in meaning to imperfective markers in other languages. For example, the continuative morpheme, which was encountered in Chapters 2 and 3, appears with situation types of activities and accomplishments, due to the feature of duration. When it occurs, the default reading is that the event is unbounded.

This section tests whether the continuative, the iterative, the habitual, the hold, and the conative morphemes are imperfective morphemes. In the end, this section argues that there is one marker of imperfective in ASL: the conative morpheme, a marked type of imperfective. Continuative and iterative morphemes, which contributes to situation type, are not imperfective markers. Habitual and hold morphemes are under situation type and also do not have anything to do with viewpoint; rather, they coerce generalizing states and accomplishments respectively, as explained in Chapter 3. The conclusion is that there is no viewpoint morpheme for the general imperfective, which is consistent with the fact that there has been no proposal in the sign linguistics literature for an imperfective marker in ASL. However, this is not to say that the open meaning of the imperfective is absent from ASL. Rather, this is carried by neutral viewpoint, which can have an open or closed interpretation, as discussion in section 4.3.

The section is structured as follows. The first subsection (4.2.1) recognizes several kinds of imperfective, including the general imperfective, and introduces a working definition for the imperfective. Then section 4.2.2 argues that the conative morpheme marks a special type of imperfective in ASL. Next, section 4.2.3 justifies the claim that there is no viewpoint morpheme for the general imperfective in ASL.

4.2.1 Working definition

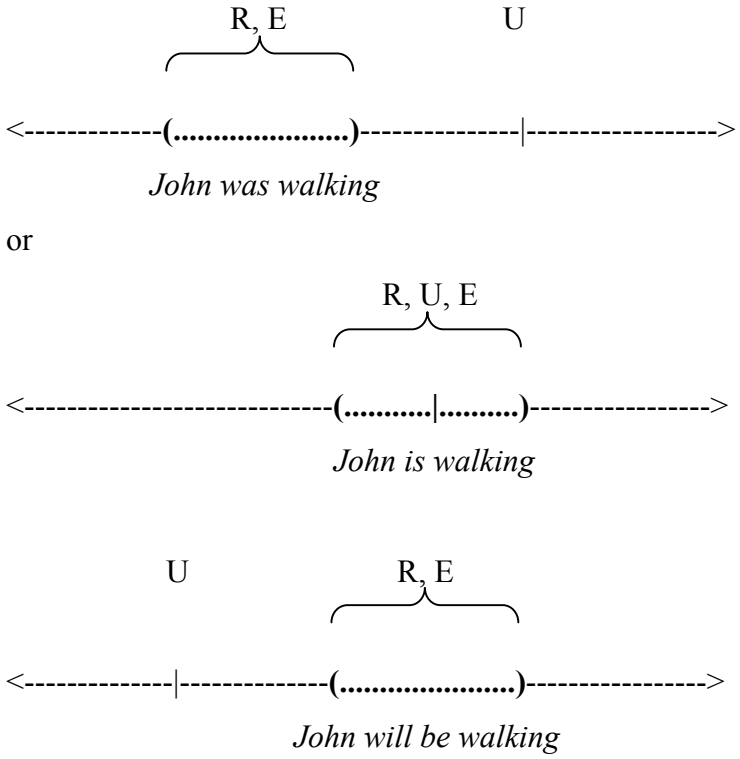
In the beginning of the chapter, a general schema was provided for imperfective viewpoint. This is adopted as a working definition of imperfectivity: it presents an unbounded view of the event. The unboundedness is represented by the slashes (///) in (78) and by the parentheses in (79).

(78) General schema for imperfective viewpoint (Smith 1997: 73)

I F

. . . ///// . . .

(79) Imperfective



The schemas for the imperfective are different than those for the perfective. In the schemas for the perfective, the events are closed, as represented by square brackets [ ]. Moreover, perfective viewpoint is available only for events in the past or in the future, not in the present.

The working definition of the imperfective is meant to be broad enough to capture the range of imperfectives seen across languages. Several kinds of imperfectives have been recognized, and languages vary in the types of imperfective they exhibit. The above definition is for a *general imperfective*, which occurs regardless of situation type.

The English imperfective is a sub-type called the *progressive*, marked by an auxiliary (*be*) and the suffix *-ing*. The progressive focuses on the internal stages of non-statives, or events. The precise meaning of the English progressive has received much debate in the literature on English aspect. Two issues are summarized below in order to

illustrate the intricacy that is involved in characterizing the precise meaning of an imperfective form in a given language.

The first issue concerns the truth conditions for the progressive. Bennett and Partee (1972)'s superinterval analysis suggests that a progressive sentence in English is true at an interval I if and only if there is a larger interval properly containing I in which the non-progressive sentence is true. However, Dowty (1979) notes that this definition is not adequate, because it does not account for the imperfective paradox. Compare the pair of sentences in (80). The sentence in (80a) is an activity; it entails the sentence in (80b). On the other hand, the sentence in (81a) is an accomplishment; it does not entail the sentence in (81b). The different entailment patterns for activities in imperfective form and for accomplishments in imperfective form underlies the imperfective paradox.

(80) a. John was running.
b. John ran.

(81) a. John was running to the store.
b. John ran to the store.

The imperfective paradox led Dowty (1977) to propose the truth conditions for the progressive in (82). The denotation says that a progressive sentence (e.g. *John was running*) is true if and only if the interval referred to by the sentence is a proper final part of the interval for the event denoted by the non-progressive version (i.e. *John ran*). The denotation is further illustrated by a schema in (83).

(82) For a sentence A, a model M, an interval i, and a world w:

PROG(A) is true in M at (i,w) iff there is an interval j such that $i \subset j$ and i is not a final subinterval for j, and there is a world w' for which A is true at (j,w') and w is exactly like w' at all times preceding and including i.

(83) $(\ldots\ldots\ldots (\ldots\ldots)_i \ldots\ldots\ldots\ldots)_j$

k

John was running is true in the interval i if and only if *John ran* is true in the part labelled k.

Mittwoch (1988) shows that such a partitive denotation is inadequate for several reasons. Only three of these reasons are summarized here. First, the partitive denotation incorrectly predicts that the sentence *It was raining for two hours when I arrived* means that I arrived in the middle of the two-hour interval rather than at the end, which is the intended meaning. (At the same time, the event of raining can continue, so that the sentence does not have to mean that I arrived at the end of the raining interval.) Second, the progressive may not only refer to intervals but also to instants as in *At 5 o'clock, I was working*. Third, if there is an interval, it does not have to be co-extensive with an interval specified by a temporal adverb, as in *Last year, John was teaching at Harvard*. The contrast between the meanings predicted by Dowty's (1977) and the actual meanings are schematized in (84). For these reasons, Mittwoch suggests removing the 'subinterval' requirement from the denotation of the progressive, and leaving it up to pragmatics to determine the nature of the interval in question.

(84)

	Dowty's predicted meaning	Actual meaning
a.	$(\ldots . (\ldots k \ldots)_i \ldots .)_j$	$(\ldots . (\ldots . k)_i \ldots .)_j$

i = raining for two hours

k = when I arrived

b. $(\ldots . (\ldots .)_i \ldots .)_j$ $(\ldots . (\ldots .)_i \ldots .)_j$

k i = was working k

k = 5 o'clock

c. $(\ldots . (\ldots .)_i \ldots .)_j$ $(\ldots . (\ldots .)_i \ldots .)_j$

k i = teaching at Harvard k

k = last year

The second major issue is how the progressive morpheme applies to a base sentence. Dowty's (1977) denotation is based on the assumption that the progressive morpheme is an operator (i.e. a function) which applies to a basic sentence and yields a new meaning. There are two ways for an operator to apply to a sentence: extensional and intensional. An extensional operator does not assume any relationship between actual events and possible events. An intensional operator means that there is a relationship between actual events and possible events. Parsons (1990) suggests that the progressive morpheme is an extensional operator, since it correctly predicts that the progressive form (*John is crossing the street*) does not entail the simple past form (*John crossed the street*). On the other hand, Landman (1992) points out that an intensional view of the progressive morpheme makes further predictions not captured under an extensional view: the progressive form is still true in situations where the event may have been interrupted, and at the same time, it is not true in situations where the world is not a reasonable continuation of the event.

The disadvantage of an intensional view is that it requires the denotation of a verb phrase to be a complete event, which does not have to be the case. For example, the verb phrase *cross the street* could denote either a complete or incomplete event. An extensional view does not impose any requirement on the denotation of the verb phrase. Zucchi (1999) favors an extensional view and repairs Parson's approach in several

technical ways so that it captures the additional insights of the intensional view. This approach is assumed here as well, and is summarized as follows.

(85) Zucchi's (1999) 'incomplete events' approach to imperfectivity
i) verb phrases denote events that may be either complete or incomplete (as we see it in the actual world)
ii) a perfective verb phrase denotes a event that is complete (as we see it)
iii) an imperfective verb phrase denotes an event that is incomplete (as we see it)

The discussion regarding the definition of the progressive or more broadly, the imperfective, continues to go on. These issues still do not affect the working definition of imperfectivity that has been adopted at the beginning of the section. The fundamental contrast between the perfective and the imperfective hinges on whether the event is bounded (= semantically visible) or unbounded.[12] This view is nicely illustrated by a metaphor from Mittwoch (1988): stative sentences portray photographs, activities are like movies, and progressive forms of sentences present either a still or a clip from a movie.

4.2.2 Marked imperfective

Now I turn to the question of how imperfectivity is encoded in ASL. Following Chapter 2, ASL exhibits six aspectual morphemes in all. Four of them contribute to situation type: continuative, iterative, habitual and hold. Section 4.1 has shown that another morpheme, FINISH, belongs to viewpoint and marks perfectivity. This section argues that the remaining morpheme, the conative, marks a special type of imperfective viewpoint, namely, the conative morpheme.

As described in Chapter 2, the conative morpheme functions to show the preliminary stages prior to an event. For example, when the morpheme appears with RUN-OUT-OF, the meaning is that there was an attempt or effort for something to run

[12] This applies to states as well. For languages in which the imperfective standardly applies to states, e.g. Russian and French, states are just that, unbounded.

out. This morpheme covers both the 'delayed completive' (Brentari 1998) and 'unrealized inceptive' (Liddell 1984).

A clause with the conative morpheme is often followed by a second clause. The clause with the conative morpheme, notated as C1 for 'first clause', focuses on the stages prior to the onset of the event. The second clause, notated as C2, tells what happens after the onset. The attempt can be successful as in (86a). This is shown by the base form of the same verb in the second clause. This sense corresponds to the meaning of Brentari's (1998) delayed completive. The attempt to carry out the event can also be unsuccessful, as in (86b). This is seen by the fact that the second clause uses a different verb than the first one, showing what happened after the unsuccessful attempt of the first event. This sense corresponds to the meaning of Liddell's (1984) unrealized inceptive.

(86) a. [PAPER conative+RUN-OUT-OF]$_{C1}$ [pro RUN-OUT-OF FINALLY]$_{C2}$
'The paper was about to run out, and it finally ran out.'

b. [PAPER conative+WRITE]$_{C1}$ [pro $_{a}$CALL$_{1}$ FRIEND]$_{C2}$
'I was about to write the paper when I was called by a friend.'

This section describes three patterns of the conative morpheme which make it comparable to an imperfective marker: it appears with all types of event clauses; it is incompatible with FINISH; and it patterns like imperfective sentences with respect to a number of tests.

4.2.2.1 Conative appears with event clauses

Languages differ as to the interaction between situation type and viewpoint aspect. If the conative morpheme is an imperfective marker and therefore belongs to the viewpoint component, there may be a language-specific restriction on what situation type it appears with. It turns out that while the conative morpheme does not appear with states, it does appear with all types of events.

The conative morpheme does not appear with states, because it focuses on stages preliminary to an event, and states do not have them; any endpoints of a state are eventive. Brentari (1998: 97) presents four examples, listed below, which do not take the morpheme. They are all stative. Two are psych-verbs (FEEL and LIKE), while others describe mental states (THINK, KNOW).

(87) State
Mental state verbs
*conative+THINK
*conative+KNOW
Psych verbs
*conative+FEEL
*conative+LIKE

On the other hand, the conative morpheme appears with all types of event verb constellations. Below are examples given by Brentari (1998) and Liddell (2003), grouped according to situation type on the basis of criteria presented in Chapter 3. I provide further examples for the situation type of semelfactive. The fact that the conative morpheme appears with all event verb constellations suggests that the morpheme encodes viewpoint.

(88) a. Activity
YELL (Liddell 2003)
WASH-DISHES (Liddell 2003)
WRITE (Liddell 2003)

b. Semelfactive
SNEEZE
COUGH

c. Achievement
UNDERSTAND (Brentari 1998)
PASS (Brentari 1998)
ADMIT (Brentari 1998)

d. Accomplishment
RUN-OUT-OF (Brentari 1998)
DEFLATE (Brentari 1998)
ZOOM-OFF (Brentari 1998)
FOCUS (Brentati 1998)
INFORM (Liddell 2003)
ASK (Liddell 2003)
TELL (Liddell 2003)
PUT-IN-OVEN (Liddell 2003)

4.2.2.2 Conative morpheme is incompatible with FINISH

If the conative morpheme encodes imperfective viewpoint, it should not co-occur with morphemes that encode perfective viewpoint, since they would clash in viewpoint. As (89) shows, the conative morpheme is indeed awkward with FINISH, which has been shown to encode perfective viewpoint in section 4.1.

(89) a. [JOHN conative+COOK]$_{C1}$ [WIFE INTERRUPT]$_{C2}$
'John was about to cook but was interrupted by his wife.'

b. * [JOHN conative+COOK FINISH]$_{C1}$ [WIFE INTERRUPT]$_{C2}$
'John was about to cook, and the event was complete, and he was interrupted by his wife.'

4.2.3.3 Conative morpheme patterns like imperfective

Three tests for the imperfective are used here to determine whether sentences with the conative morpheme behave like imperfective sentences. All the three tests show that the conative morpheme does behave like an imperfective marker.

The first test is that imperfective sentences may be followed by a conjunction that indicates whether the event is continuing (or is open). This is the case for sentences with the conative morpheme, as shown below. The sentence in (90) occurs in the context of telling a story about John, who is competing with other runners. They form a line, and just when John is about to run, he looks to the left and asks runners on his left side if they are ready, and then turns to look at the runners on the right side and asks them the same question, and then he runs.

		gaze: left	gaze: right	
		y/n	y/n	
(90)	JOHN conative+RUN	"READY"	"READY"	RUN

'John was about to run, asked the fellow runners if they were ready, and ran.'

A second test is that imperfective sentences are not compatible with *after*-clauses in contrast to *when*-clauses. Sentences with the conative morpheme are usually followed by a second clause. To emphasize that the event in the second clause occurs after the event in the first clause, FINISH would be inserted in the first constellation, but as (91a) shows, this is not possible. On the other hand, (91b) shows that it is possible if the stages preliminary to the event denoted in the first clause occur at the same time as the event described by the second clause. The conative morpheme then behaves like an imperfective morpheme in that respect.

(91) a. * [pro conative+STUDY FINISH]$_{C1}$ [pro DRINK COFFEE]$_{C2}$
'After I was about to study (for an exam), I drank coffee.'

b. ok [pro conative+GO]$_{C1}$ [pro CHAT+continuative]$_{C2}$
'(I was ready to leave a party.) Just when I was about to leave, I was chatting (and finally left).'

Yet another test is that imperfective event sentences are not compatible with durational adverbs in some contexts, since the imperfective focuses a sub-interval of the event so that it is pragmatically odd to specify the duration of the entire event. Sentences with the conative morpheme are similarly odd with such adverbs for a pragmatic reason: the conative morpheme portrays only preliminary stages prior to the event and there is no way to apply the time span defined by the durational adverb to the whole event. On the other hand, durational adverbs are fine if they appear with reduplication of the clause containing the conative morpheme. The reduplication indicates multiple attempts, and these multiple locations are located within the time span defined by the durational adverb. In addition, durative adverbs are fine if there is a second clause describing what happened after the onset of the event.

(92) a. ? JOHN conative+STUDY ALL-WEEK
'John was about to study (but was not able to) all week.'

b. ALL WEEK JOHN conative+STUDY conative+STUDY
'John made several attempts to work all week.'

c. [JOHN conative+]$_{C1}$ [pro STUDY ALL-WEEK]$_{C2}$
'John was about to work, and then ended up working all week.'

4.2.2.4 Analysis

An analysis of the conative morpheme needs to clarify its meaning as well as restrictions on its use. After discussing each issue in turn, this section spells out the semantic contribution of the conative morpheme.

The meaning of the conative morpheme is best understood by contrasting it with the pair of English sentences below. The sentence in (93a) makes it clear that John made it to school. It is also clear from (93b) that John has walked in the direction of school, but it is unknown whether he made it to school in the end. The sentence in (93c) comes closest to the meaning of the conative morpheme.

(93) a. John walked to school.
b. John walked toward school.
c. John was about to walk to school.

In contrast, the conative morpheme in ASL would mean that John was just about to walk to school, i.e. he did not do any walking yet. The crucial point is that the preliminary stages *prior* to the start of the event are focused. Thus in the proposed temporal schema for the conative morpheme, the preliminary stages that are focused come before I.

(94) Temporal schema for conative imperfective viewpoint in ASL
/// I

An advantage of this analysis is that it is able to account for the form that has been labelled by Klima and Bellugi (1979) as ‘resultative’. The resultative form is analyzed as having two separate clauses. Both constellations share the same verb: BECOME-SICK. In addition, the first clause adds the conative morpheme and has imperfective viewpoint. When the two clauses are taken together, they form a resultative construction meaning that something finally came about.

(95) Analysis of Klima and Bellugi's (1979) SICK+resultative

[pro conative+(BECOME-SICK)]$_{C1}$ [pro BECOME-SICK]$_{C2}$

impf('become sick') 'become sick'

'He was about to become sick, and finally became sick.'

Now I turn to the other issue in this section: restrictions on the use of the conative morpheme. In general, a clause with the conative morpheme (abbreviated as C1) is followed by a second clause (C2) which indicates the result of the attempt. C1 itself does not say anything about whether the attempt is successful. Rather, that is stated or inferred from C2.

To show that the attempt is successful, the verb in C2 is a copy of the verb in C1, in non-conative form. This is shown for atelic verbs in (96a) and telic verbs in (96b).

(96) a. [pro conative+COOK(atelic)]$_{C1}$ [pro COOK FINISH]$_{C2}$

'I was just about to cook, and was indeed able to cook.'

b. [pro conative+WIN(telic)]$_{C1}$ [pro WIN]$_{C2}$

'I was just about to win (a game), and was indeed able to win.'

To imply that the goal or attempt to carry out the event was not met, the verb in C2 is not a copy of the first verb but rather another verb indicating what happened instead of the anticipated culmination of the event.

(97) a. [pro conative+COOK]$_{C1}$ [HUSBAND INTERRUPT]$_{C2}$

'I was just about to cook, when my husband interrupted me.'

b. [pro conative+WIN]$_{C1}$ [pro LOSE]$_{C2}$

'(From the announcer's report, it sounded like) I was about to win (the game), but I ended up losing (and was surprised).'

The restriction that C2 is non-conative revises Brentari's (1998) semantic condition on the delayed completive. Brentari claims that only telic verbs have this form. This condition is not accurate. As seen in (87), there are examples of atelic predicates which allow the conative morpheme: YELL, WRITE and WASH-DISHES. Her semantic condition is revised as follows. Her example, delayed completive+RUN-OUT-OF+end, is reanalyzed as two clauses, C1 and C2. C1 consists of conative+RUN-OUT-OF, while C2 contains the same verb but without the conative morpheme: RUN-OUT-OF. Since C2 contains the same verb in base form as C1, it indicates that the attempt to carry out the event is successful.

The analysis of the meaning of the conative morpheme and restrictions on its use is summarized as follows.

(98) Conative morpheme

When the conative morpheme is inserted in a sentence, the sentence focuses on the attempt for the event to be carried out. It encodes a special case of imperfective viewpoint. It is restricted to event sentences and is not followed by a conative sentence.

4.2.2.5 Cross-linguistic survey of the 'conative'

The use of the conative morpheme has striking parallels to the use of the imperfective in Russian to express a 'conative' sense. Forsyth (1970:71) defines this sense as "a tendency towards that point, whether or not it is ever reached." Forsyth notes that the conative reading is "often emphasized by the use of both forms [imperfective and perfective] in the same sentence." In (99), the Russian verb for *solve* is used twice; the first form is imperfective and the second form is perfective. When it is used imperfectively, it means 'to try to solve'; when it is used perfectively, it means 'solve (successfully).' There is no particular morpheme for the 'conative'; rather, this is expressed through the use of the imperfective form in contrast to the perfective form.

(99) My dolgo **rehali**[IMPF] zadachu
we long solve problem
'We spent a long time trying to solve the problem'

i nakonec **reshili**[PERF] ee
and finally solve it
'and at last we solved it.' (Forsyth 1970: 71)

A similar example follows in (100). The Russian verb for *persuade* is used twice, first in perfective form and second in imperfective form. Again, the imperfective form means 'attempt to persuade' while the perfective form means 'persuade.' Note that this perfective form is paired with a negation marker, so the overall meaning is that the event of persuading did not culminate successfully.

(100) Oni ne **ugovorili**[PERF] ee ujti s nimi
they not persuade her go-away with them
'They didn't succeed in persuading her to go away with them'

xotja dolgo **ugovarivali**[IMPF]
though long persuade
'although they spent a long time trying to.' (Forsyth 1970: 71)

In Russian, the imperfective and perfective forms depend on the verb. The imperfective form usually ends with the suffix *-at'* and may have other suffixes preceding that like **-yv** and **-iv** as bolded below. The perfective form often has a prefix like **vy-**.

(101)

Imperfective conative	Perfective
zabyb**at**' 'tend to forget'	zabyt' 'forget completely'
otb**ivat**' 'constantly fight'	otbit' 'succeed in taking over'
opravd**yvat'** 'try to justify'	opravdat' 'justified'
derdat' eksamen 'sit an exam'	**vy**derdat' eksamen 'pass an exam'

(Forsyth 1970: 71)

These patterns mirror those for the conative morpheme in ASL: the meaning of the ASL morpheme indicates a "tendency" toward a culmination without indicating whether it is ever achieved. The ability to have a "tendency" toward a culmination depends on the verb. As Forsyth (1970) and Smith (1997: 247) note, only some Achievements may take an imperfective form to express a conative sense, as long as it makes pragmatic sense. Otherwise, verbs like 'find' are not compatible with such a form. The same is true in ASL. Another similarity is that the verb with the conative morpheme is usually followed by another verb in perfective form that implies whether the event culminated or not.

The imperfective and perfective forms in Russian are not always predictable, so that there is no one particular morpheme that exclusively conveys conative meaning. There are other languages in addition to Russian that also express a conative meaning, such as English, Greek, Latin, Navajo, Digueno and Masa; and others. What these languages differ in is how they express the conative meaning. In English, the conative meaning is idiomatic - certain expressions with the progressive, like opening a box vs. opening a car, can carry a conative meaning, as seen in (102a). Moreover, English has idiomatic phrases that convey conative meaning: *about to* and *on the verge of*. In Greek and Latin, the conative reading appears with the imperfective form, but it idiosyncratically appears with certain verbs, as illustrated in (102b) and (102c) respectively.

(102) a. English

We are **opening** the box. (= we are trying to open the box)

(vs. We are opening the car ≠we are trying to open the car)

(Binnick 1991: 60)

b. Greek

Halónneson **edídon** 'he offered (tried to give) Halonnesus'

(Binnick 1991: 59)

c. Latin

in	exsilium	**eiciebam**	quem	iam	ingressum
into	exile	send out (impf)	who	already	enter

esse	in	bellum	videbam
be	into	war	see

'Was I trying to send into exile one who I saw had already gone into war?'

(Binnick 1991: 59-60)

Digueno presents an example of a language that has a single morpheme which can be used for conative meaning. Jones (1982: 73), citing Langacker (1972: 213), notes that Digueno marks 'unaccomplished aspect' with the suffix **-x**, which means 'incomplete in present, but may be complete in future'. Unaccomplished aspect is in contrast to 'incomplete aspect' which means that the event is incomplete in both the present and the future. One meaning is given as 'was going to.' The same suffix also appears in several other contexts, such as future tense contexts and subordinate clauses of 'want' and 'be afraid to'.

(103) a.

iipac	wewaa-**x**	te-kwaa
man	holler-UA	non-present-make-noise

'The man was going to holler.'

b. xkwañ wemii-**x**
baby cry-UA
'The baby will cry.'

c. iipac wewaa-**x** mesiyay
man holler-UA be-afraid
'The man is afraid to holler.'

d. iipac wewaaw-**x** pekwaa
man holler-UA want
'The man wants to holler.'

Masa, a language spoken in Chad, presents an interesting example, because it is a tonal language and uses tones to convey aspect (deDominicis 2001). According to deDominicis, Masa marks three aspects: neutral, 'accomplished', and 'unaccomplished'. They are marked through the tones H (high), M (medium) and L (low). The particular tone used for a given aspect depends on the verb. The verbs fall into one of two 'classes'. A Class 1 verb is exemplified in (105), where the symbol '?' denotes a glottal stop, and the diacritics -, ` and ' indicate M, L and H tone respectively.

(104) Masa

	Class 1 verbs	Class 2 verbs
Neutral	M(M)	L(L)
Accomplished	M(H)	H(M)
Unaccomplished	H(M)	L(M)

(105) a. Neutral
f-__ p_t_
find(∅)-you bovine
'find a cow'

b. Accomplished

?àn **f_** p_t_

I find(acc.) bovine

'I found a cow.'

c. Unaccomplished

?àn **fí** p_t_

I find(unac.) bovine

'I find a cow.'

The English glosses for the examples with neutral and unaccomplished aspect are in present tense, while those for accomplished aspect are in the past. It is possible that unaccomplished and accomplished aspect refer to imperfective and perfective respectively, and that the unaccomplished aspect can be used for a conative reading, since the examples are achievements and the only way they can be interpreted in the present (as indicated by the English glosses) is if the preliminary stages are focused, as in 'I am about to find a cow' or 'I am trying to find a cow.'

The use of the imperfective (or unaccomplished) form in these languages may not be limited to the conative reading. ASL is distinctive in that its conative morpheme is used exclusively to express the conative reading. The morpheme is not used in other contexts for a general imperfective.

4.2.3 A morpheme for the general imperfective?

Section 4.1 has shown that the morpheme FINISH marks perfectivity and section 4.2.2 has shown that the conative morphemes markes a special type of imperfective. This section now turns to the other morphemes (continuative, iterative, habitual and hold).

Theoretically, situation type and viewpoint constitute separate components of the aspectual system. It follows that if a morpheme falls under situation type, it cannot fall

under viewpoint. There are two reasons that the continuative, iterative, habitual and hold morphemes fall under situation type and therefore are not (imperfective) viewpoint morphemes, even though the morphemes concern the internal temporal properties of a situation, and imperfective viewpoint looks inside a situation too.

The first reason is that the four aspectual morphemes co-occur with perfective FINISH. If any of them were imperfective markers, it would be impossible for them to co-occur with clause-final FINISH. The examples in (106) show that the morphemes are compatible with perfective FINISH. (In contrast, as shown in section 4.1.4.4, the continuative and iterative morphemes are not compatible with preverbal FINISH, which is a perfect marker.)

(106) a. JOHN COOK+continuative FINISH
'John cooked.'

b. JOHN COOK+iterative FINISH
'John cooked repeatedly.'

c. JOHN GO+habitual CHURCH FINISH
'John went to church regularly.'

d. JOHN PLAY+hold FINISH
'John played, and stopped.'

The second reason is that the morphemes are concerned with the internal temporal features of a situation type like duration, telicity and dynamism. As discussed in Chapter 3, the continuative and iterative morphemes relate to duration, while the habitual morpheme affects the feature of dynamism in an event sentence, and the hold morpheme contributes telicity. None of them involve viewpoint characteristics.

For these two reasons, none of the morphemes are general imperfective viewpoint morphemes per se. While the continuative and iterative morphemes lend an unbounded reading that is consistent with imperfective viewpoint, the unbounded reading is due to the Temporal Schema Principle, as explained in section 4.3.

4.2.4 Summary

The above patterns, when taken together, show that ASL grammaticizes one marked imperfective viewpoint, which is encoded by the conative morpheme. This viewpoint focuses the preliminary stages prior to an event. It does not say anything about whether the attempt to carry out the event is successful or not; this is implicit from the following clause.

4.3 Zero-marked clauses : the neutral viewpoint

The chapter has focused on ASL sentences that have an overt viewpoint morpheme, like the particle FINISH for perfective and the conative morpheme. However, it is quite common for ASL sentences not to have overt viewpoint morphemes. A number of such sentences appear in Chapter 3; the following examples illustrate.

(107) a. JOHN KNOW HISTORY
'John knows history.'

b. JOHN BE-SICK
'John is sick.'

c. JOHN WALK
'John is walking.'

d. JOHN COUGH
'John coughed (just once).'

e. JOHN ARRIVE
'John arrived.'

f. JOHN COOK S-A-L-M-O-N
'John cooked salmon.'

These sentences are 'zero-marked': they are sentences which do not carry any overt morpheme for a particular viewpoint. In the two-component theory of an aspectual system, every clause has a viewpoint. The neutral viewpoint is that of a zero-marked clause. It allows flexible interpretation, i.e. open or closed. Generally, context determines which interpretation is appropriate. That is why the flexibility of neutral viewpoint is needed. At the same time, there is a pattern of default interpretations of the neutral viewpoint, which depends on the boundedness of the situation. The inference of whether a clause is bounded or unbounded allows a further inference of temporal interpretation, which is discussed in Chapter 5.

This section is concerned with neutral viewpoint as it occurs in ASL. First, section 4.3.1 introduces pragmatic principles that constrain the default interpretation of zero-marked clauses in other languages that do not always require overt marking of viewpoint, like Chinese, Russian, and Navajo (Smith and Erbaugh 2005, Smith, Perkins and Fernald 2005, Klein et al. 2001, and Bohnemeyer and Swift 2004). Then, section 4.3.2 discusses how these same pragmatic principles apply to the interpretation of sentences with neutral viewpoint in ASL. Section 4.3.3 discusses further cases of sentences with neutral viewpoint: those with aspectual morphemes that contribute to situation type; those with temporal adverbs; and those with verbs of perception.

4.3.1 Zero-marked clauses in other languages

Smith and Erbaugh (2005) note that zero-marked clauses are common in Mandarin. They have neutral viewpoint, i.e. they have either a bounded or unbounded

reading. The presence of a bounded or unbounded reading depends on a combination of discourse context and pragmatic principles. Smith and Erbaugh propose one principle in particular, called the Temporal Schema Principle, to account for the interpretation of a zero-marked clause in Mandarin Chinese. Smith, Perkins and Fernald (2005) use the same principle to predict the interpretation of a zero-marked clause in Navajo.

(108) Temporal Schema Principle (Smith and Erbaugh 2005: 728)
In a zero-marked clause, interpret a verb constellation according to the temporal schema of its situation type, unless there is explicit or contextual information to the contrary.

This principle is intended to predict the temporal location of a situation in the default case. The default case means there is no relevant adverb or lexical item or pragmatic knowledge that provides temporal information. Also, the discourse surrounding the clause does not specify how to interpret it. In that case, a "deictic pattern" of temporal interpretation is assumed. The deictic pattern is summarized as follows:

(109) Deictic pattern of temporal interpretation (Smith and Erbaugh 2005: 715)
a. Unbounded situations are located in the present.
b. Bounded events are located in the past.

While the deictic pattern is intended to predict temporal location, which is discussed in Chapter 5 in detail, and the Temporal Schema Principle falls under this pattern, it is possible to use the principle to determine whether the situation described by a zero-marked clause is bounded or not. In general, if a sentence is taken to be in the present, it can be inferred by the deictic pattern that a situation is unbounded, and likewise if a sentence is understood to be in the past, the situation is accordingly inferred to be bounded.

For example, in the case of Mandarin Chinese, Smith and Erbaugh suggest that under the deictic pattern of temporal interpretation, present situations are unbounded (and located at utterance time). Frequently, they are expressed by zero-marked state or activity verb constellations. Indirectly, then, by inference, zero-marked state and activity verbs have a default unbounded reading.

(110) Zero-marked verb constellations which are unbounded

a. . . . xiong kuangfang di qianhou **yaobai** . . . (activity)
bear wild style DI front back sway
'. . . the bear <u>is swaying</u> wildly back and forth . . .'

b. xianggang **shi** shijie shang ziyou du zui gao de jingji tixi (state)
Hong-Kong is world on freedom degree most high DE economic system
'Hong Kong <u>has</u> the freest economic system in the world.'

(Smith and Erbaugh 2005: 736)

In contrast, past situations are bounded (and located by default before utterance time). They too are frequently expressed by zero-marked telic verb constellations. That is, zero-marked achievement and accomplishment verb constellations have a default bounded reading.

(111) wo fei dan xin li zancheng, erqie ye **ceng weiwen** . . . (telic)
I not only heart inside approve, but too once write article
'I not only approve, but I, too, <u>once wrote articles</u> . . ."

(Smith and Erbaugh 2005: 740)

Klein et al. (2001) have also discussed viewpoint in zero marked clauses in Mandarin Chinese. If a sentence does not have an aspectual particle, certain linguistic devices or discourse factors make it clear which viewpoint is used. The main clause in (112) has no aspectual particles. According to Smith (1997), it has neutral viewpoint, i.e. it is open to either a bounded or unbounded reading. The closed reading is that Mali started to write the moment Zhangsan arrived home, and the open reading is that Mali was already writing when Zhangsan arrived home. Klein et al. observe that when the main clause stands on its own, it must have one of the aspectual particles clarifying which viewpoint is used. However, they observe in addition that even though there are no aspectual particles in the subordinate clause, the context (specifically the expression 'arrive home') makes it clear that the event is bounded. This negates their first observation. It is maintained that zero-marked clauses are possible in Mandarin Chinese, and they receive neutral viewpoint.

(112) Zhangsan dao jia de shihou, Mali xie gongzuo baogao
Zhangsan arrive home DE time, Mali write work report
'When Zhangsan arrived home, Mali wrote/was writing the work report.'

While Smith and Erbaugh (2005)'s Temporal Schema Principle is flexible enough to predict the temporal location of an event based on its situation type without depending on viewpoint, Bohnemeyer and Swift (2004) suggest the aspectual reference of a zero-marked clause depends on the principle of event realization and Gricean Quantity implicatures. Specifically, a zero-marked telic predicate entails 'event realization' if it is perfective, while an atelic predicate is compatible with event realization under both imperfective and perfective viewpoint. The default aspect can be overridden by overt marking. They illustrate this point in several languages: Yukatek Maya, Russian, Inuktitut, and German.

Below, an example is shown for Russian. An unprefixed verb is usually atelic and compatible with either imperfective or perfective viewpoint, as shown in (113a). Most

prefixed verbs are telic and interpreted perfectively, as seen in (113b). To express the imperfective form of a telic verb, a marked form is used, such as suffixing *-iv/-yv*, as illustrated in (113c).

(113) a. Atelic verb --> imperfective or perfective
vchera ja **pisala** pis'ma dva chasa
yesterday I wrote letters two hours
'Yesterday I wrote letters for two hours.'

b. Telic verb --> perfective
Ja **pere**-pisala pis'mo za dva chasa
I (telic)wrote letter in two hours
'I copied the letter in two hours.'

c. Marked telic verb --> imperfective
Ja pere-pis-**yv**ala pis'mo kogda Igor' prerval menja
I (telic)write-**impf** letter when Igor interrupted us
'I was copying the letter when Igor interrupted me.'

In other words, Bohnemeyer and Swift suggest a strong pragmatic correlation between telicity and viewpoint which can predict viewpoint in zero-marked clauses. The correlation is captured in the table below. In contrast, for Smith and Erbaugh (2005), the viewpoint for a zero-marked clause is always neutral; what changes is the bounded versus unbounded interpretation. This account allows for departures from the default; under Bohnemeyer and Swift, the viewpoint itself has to change to get the non-default readings.

(114) Bohnemeyer and Swift's (2004: 266) idealized telicity-dependent aspect system

	Predicate	
Viewpoint	Atelic	Telic
Imperfective	∅	Overtly expressed
Perfective	Overtly expressed	∅

4.3.2 Zero-marked clauses in ASL

This section shows that the Temporal Schema Principle in (112) predicts whether a zero-marked clause in ASL receives a bounded or unbounded interpretation by default. At the same time, the section shows that it is possible to override the default if a different interpretation can be inferred from context. Thus zero-marked clauses in ASL have neutral viewpoint, since they allow either a bounded or unbounded interpretation depending on context.

According to the previous sections, all clauses with FINISH are perfective. All clauses with the conative morpheme are likewise imperfective. I now show how the Temporal Schema Principle predicts the default interpretation of a zero-marked clause. The default interpretation depends on the situation type of the verb constellation. Recall that each situation type is associated with a temporal schema that gives its defining temporal properties. The temporal schema of a state and of an activity is unbounded; that of the rest is bounded. Now I turn to each situation type in turn and see how the principle derives the default reading for the sentence.

The first situation type in ASL is an individual-level state. Verb constellations of this situation type are presented below. In the absence of temporal adverbs or other prior context, the default reading for these sentences is in the present, as indicated by the English glosses. By the deictic pattern of interpretation, and by the Temporal Schema Principle, it is inferred that states are unbounded, since only unbounded situations occur in the present by default.

(115) Zero-marked individual-level stative verb constellation --> unbounded by default

a. JOHN KNOW HISTORY
'John knows history.'

b. JOHN LIKE CHOCOLATE
'John likes chocolate.'

A stage-level state, which is exemplified in (116), similarly receives a default unbounded reading. This is consistent with the default present reading for the clauses.

(116) Zero-marked stage-level stative verb constellation --> unbounded by default

a. JOHN BE-SICK
'John is sick.'

b. JOHN BE-ANGRY
'John is angry.'

The same reasoning applies for the situation type Activity. Below are some examples. By default, they present an ongoing event. The glosses indicate they are interpreted in the present. This is consistent with their temporal schema, which is unbounded.

(117) Zero-marked activity verb constellation --> unbounded by default

a. JOHN WALK
'John is walking.'

b. JOHN EXPLAIN HISTORY
'John is explain history (to his son).'

c. JOHN STUDY HISTORY
'John is studying history.'

Another situation type is a semelfactive. Examples are provided below. Semelfactives have a single internal stage. For this reason, their temporal schema is bounded, as seen indirectly through the default past reading for the sentences. The bounded temporal schema indirectly suggests a default bounded reading for semelfactives.

(118) Zero-marked semelfactive verb constellation --> bounded by default

a. JOHN COUGH
'John coughed (just once).'

b. BIRD FLAP-WING
'The bird flapped its wings (just once).'

The remaining situation types are achievements and accomplishments, which are exemplified in (123) and (124) respectively. These situation types are telic, and therefore their temporal schemas portray them as bounded. The bounded nature of the situations is seen from the default past reading of the sentences. Thus, achievements and accomplishments have a bounded interpretation by default.

(119) Zero-marked achievement verb constellation --> bounded by default

a. JOHN ARRIVE
'John arrived.'

b. JOHN PASS TEST
'John passed the test.'

(120) Zero-marked accomplishment verb constellation --> bounded by default

a. JOHN COOK S-A-L-M-O-N
'John cooked salmon.'

b. JOHN WRITE PAPER
'John wrote a paper.'

The fact that the bounded interpretation is the pragmatic default for telic verb constellations accounts for the fact that the perfective marker FINISH is not necessary in two sentences presented in (72) and (73), repeated below.

_____t _____whq

(121) PRO.1 ARRIVE HOME, PRO.1 MOTHER WORRY, WHY WHERE
'I got home, (and) I found my mother worried about where I had been.'
(Janzen 1998: 103)

_____t

(122) PRO.1 ARRIVE, PRO.1 EXPLAIN HAPPEN
'I got home, (and) I explained what had happened.' (Janzen 2003: 104)

Zero-marked clauses in ASL then have a default interpretation that is predicted by the Temporal Schema Principle. As Smith and Erbaugh (2005) and Smith, Perkins and Fernald (2004) observe, however, the default interpretation may be overridden anytime in the right context. This is shown for each situation type, starting with zero-marked individual-level stative clauses. By default, they receive an unbounded reading according, but in the context given in (123), they can receive a closed reading.

(123) Zero-marked individual-level stative verb constellation can receive closed reading

I GROW-UP, MY GRANDFATHER **KNOW** THREE-OF-US.
NOW FINISH THROUGH BRAIN STROKE. HE LOOK-AT-US,
NOT REMEMBER.

'When I grew up, my grandfather knew the three of us well. Now he has gone through a brain stroke, and looking at us, he doesn't remember who we are (i.e. he no longer knows who we are).'

Likewise, zero-marked stage-level statives and zero-marked activity verb constellations receive an unbounded reading by default according to the Temporal Schema Principle. However, they are compatible with a bounded, closed reading, provided there is additional context to support the reading, as shown in (124) and (125).

(124) Zero-marked stage-level stative verb constellation can receive closed reading

THIS MORNING pro **BE-SICK**. NOW FEEL BETTER.
'This morning, I was feeling sick. Now I feel better (i.e. I am no longer sick).'

(125) Zero-marked activity verb constellation can receive closed reading

JOHN WALK. **ARRIVE** BUILDING.
'John walked and arrived at the building (i.e. John is no longer walking).'

Zero-marked semelfactive verb constellations represent a special case. Since they have a single stage, they are necessarily bounded. There is no way they can receive an open interpretation. However, if they are coerced as an activity verb constellation via the iterative morpheme, they receive an open reading by default, like regular activity verb

constellations. Moreover, they may receive a closed reading in the right context, as illustrated in (126).

(126) Semelfactive verb constellation coerced as Activity can receive closed reading

THIS MORNING pro **COUGH**+iterative. NOW FEEL BETTER.
'This morning, I was coughing. Now I feel better (i.e. I am no longer coughing).'

Like semelfactives, achievements involve a single stage and are intrinsically bounded, so they always receive a closed reading. However, it is possible to have an open reading if they have the conative (imperfective) morpheme, as discussed earlier.

(127) Achievement verb constellation with conative can receive open reading

JOHN$_i$ **DIE**+conative. STILL ALIVE.
'John was about to die, but he was still alive.'

Zero-marked accomplishment verb constellations are bounded and by the Temporal Schema Principle, receive a closed reading by default, as shown in (128). However in the right context, they allow an open reading as well, as shown in (129).

(128) Zero-marked accomplishment verb constellation can receive closed reading

THIS MORNING pro **COOK S-A-L-M-O-N**. AFTERNOON PEOPLE COME. pro EAT+iterative. pro ENJOY.

'This morning, I cooked salmon. In the afternoon, people came, ate (the salmon) and enjoyed (the party) (i.e. I am no longer cooking salmon).'

(129) Zero-marked accomplishment verb constellation can receive open reading

THIS MORNING pro **COOK S-A-L-M-O-N**. pro STILL COOK.
'This morning, I cooked salmon. I am still cooking it.'

The default interpretation of a zero-marked verb constellation, as predicted by the Temporal Schema Principle, then can be overridden. The interpretation can be understood as a cancellable implicature in the sense of Grice (1975) and Levinson (1983: 114). An implicature is a pragmatic inference, and since the default interpretation is inferred by a pragmatic principle, it is an implicature. An implicature is cancellable or defeasible by adding additional information. This explains why FINISH is used frequently with atelic sentences, in order to cancel their default unbounded interpretation. The cancellation of the implicature also explains why the conative morpheme appears naturally with telic sentences, i.e. achievements and accomplishments: the morpheme cancels their inferred bounded interpretation. At the same time, FINISH and the conative morpheme are possible with telic and atelic sentences respectively, which is just as expected, since viewpoint and situation type represent separate components of aspect.

4.3.3 Discussion

This section first clarifies the default interpretation for verb constellations marked with the continuative, iterative, habitual and hold morphemes. Then it discusses default viewpoint in sentences with temporal adverbs and verbs of perception.

4.3.3.1 Verb constellations with continuative, iterative, habitual and hold morphemes

Consider the pairs of sentences in (130) and (131). They differ only in that the second example has a continuative morpheme. The first sentence of the pair, which contains an activity verb constellation, receives an unbounded reading by a pragmatic default. The second sentence also contains an activity verb constellation; this time, a continuative or iterative morpheme has been added. Since the verb constellation remains

an activity, the second sentence in the pair also has a default unbounded reading according to the Temporal Schema Principle.

(130) a. JOHN PLAY
'John is playing.'

b. JOHN PLAY+continuative
'John is playing (for a duration).'

(131) a. JOHN PLAY
'John is playing.'

b. JOHN PLAY+iterative
'John is playing (repeatedly).'

As argued in Chapter 3, event verb constellations with the habitual morpheme are coerced stative verb constellations. They behave like the zero-marked stative verb constellations in that they are unbounded, as reflected by their present reading. Thus verb constellations with the habitual morpheme are taken to have a default unbounded reading.

(132) JOHN GO+habitual CHURCH
'John goes to church (regularly).'

Verb constellations with the hold morpheme are coerced accomplishments, as shown in Chapter 3. They are telic and therefore bounded. The default past reading reflects the boundedness of the situation. The bounded feature implies a bounded reading for verb constellations with the hold morpheme.

(133) BOAT VEHICLE-CL+MOVE+hold
'A boat was moving along and came to a stop.'

4.3.3.2 Temporal adverbs

Verb constellations have one viewpoint, whether it is conveyed by an overt marker, or whether it is neutral and interpreted by pragmatic principles. There are zero-marked clauses where the Temporal Schema Principle needs to be refined in order to determine the default interpretation of the clause. Two such types are discussed below: zero-marked clauses with temporal adverbs, and those embedded under verbs of perception.

Consider the sentence in (133), which has one of two meanings. First, it can be coerced as a generalizing sentence, as discussed in Chapter 3, section 3.8.2. Since statives are unbounded, there is a default unbounded interpretation associated with the generalized reading. Second, the sentence is read as a zero-marked accomplishment verb constellation. According to the pragmatic principles discussed above, it has a default bounded reading.

(133) JOHN CLEAN ROOM
'John cleans (his) room (in general).' (unbounded)
'John cleaned (his) room.' (bounded)

Now consider what happens when the temporal adverb NOON is inserted as in (135). NOON represents one kind of temporal adverb. As explained in Chapter 5, there are several types of temporal adverbs. Here, two types are of interest: locating adverbs and completive adverbs. Locating adverbs fix a reference time, like *at noon*, *on Monday*, and *in 1972*. Completive adverbs define an interval within which an event culminates, such as *by noon*, *in 2 hours*, and *within four weeks*. NOON is a locating adverb.

(135) NOON JOHN CLEAN ROOM
'At noon, John had cleaned the room.' (bounded)
'At noon, John is/was cleaning the room.' (unbounded)

As (135) shows, either interpretation is possible. This is further confirmed by the fact that it can be followed by a sentence that is compatible with either interpretation.

(136) a. NOON JOHN CLEAN ROOM, TWO-O-CLOCK CLOTHES WASH.
'At noon, John had cleaned the room, and then at two o' clock, he washed clothes. (bounded)

b. NOON JOHN CLEAN ROOM, STILL CLEAN.
'At noon, John was cleaning the room and is still cleaning.'
(unbounded)

Since the situation type of the verb constellation is an accomplishment, the Temporal Schema Principle predicts a default bounded reading for the sentence. This is indeed possible. At the same time, an unbounded reading is equally possible. This is not anticipated by Bohnemeyer and Swift's (2004) principle of event realization, which depends on the telicity feature of the situation type nor by the Temporal Schema Principle as interpreted by Smith, Fernald and Perkins (2004) and Smith and Erbaugh (2005), who focus on telicity as a relevant feature.

To seek further clues into the availability of both readings for the above zero-marked clause, consider what happens when a locating adverb is inserted into other zero-marked verb constellations of other situation types like achievements and activities. A zero-marked achievement with a locating adverb has only one default interpretation, namely bounded. This follows from the Temporal Schema Principle: the event is telic and therefore bounded, which leads to the default bounded reading.

(137) NOON JOHN ARRIVE

‘At noon, John arrived.’ (bounded)

* ‘At noon, John was arriving.’ (unbounded)

Likewise, a zero-marked activity with a locating adverb has only one default interpretation, an unbounded one, and this is again expected from the Temporal Schema Principle. The event is atelic and unbounded, leading to an unbounded reading.

(138) NOON JOHN PLAY

? ‘At noon, John had played.’ (bounded)

‘At noon, John was playing.’ (unbounded)

In contrast, a zero-marked accomplishment allows either interpretation by default when combined with a locating adverb. The bounded interpretation is anticipated by the Temporal Schema Principle. What is the source of the unbounded interpretation?

An activity verb constellation allows this interpretation by default. An accomplishment has in common with an activity the temporal feature of duration. I propose that the Temporal Schema Principle be interpreted so that both the temporal features of telicity (boundedness) and duration are relevant for predicting the default interpretation of a zero-marked clause. Smith, Fernald and Perkins (2005) propose the same move for Navajo: the feature of duration also affects interpretation. Further, the presence of a locating adverb counts as additional information that overrides the default interpretation.

In ASL, the sign NOON is a locating adverb and fixes a point on the time line. ARRIVE as an achievement is instantaneous, so it is possible to align the time of this event with the time of noon. PLAY is an activity with duration; the simplest way to match the duration with the temporal location of NOON is by placing the time of noon within the duration.

(139) a. Achievement + NOON

John arrived

<----------|----------> bounded

noon

b. Activity + NOON

John was playing

<----------(----|----)----------> unbounded

noon

I similarly argue that the durational feature in the temporal schema of an accomplishment is indirectly responsible for the availability of an unbounded reading. The accomplishment takes place over an interval of time, and NOON is inside this interval. Thus, the meaning can be unbounded as in: at the moment of noon, John was cleaning the room. To account for the availability of a bounded reading, the temporal schema of an accomplishment can also be used. The event of John's cleaning the room does not have to contain the moment of noon. Rather, as a bounded event, the duration of the event can be located anytime up to noon.

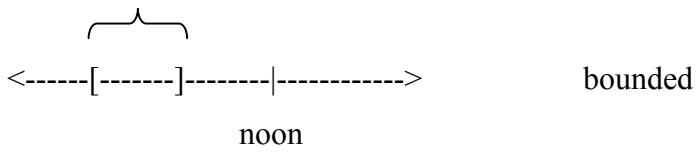
(140) Accomplishment + NOON

a. *John was cleaning the room*

<----------[----|----]----------> unbounded

noon

b. *John cleaned the room*



4.3.3.3 Verbs of perception

Verbs of perception generally have an experiencer and a theme. Common examples in English are *see*, *hear*, *feel*, *smell*, *taste*, *watch*, *notice*, and *glimpse*. To fulfill the role of theme, many verbs of perception take a verbal complement that describes an event. There are two types of perception verbs in ASL: WATCH-type verbs and SEE-type verbs.

WATCH-type verbs in ASL allow only an unbounded interpretation for the embedded clause. It is generally used in the context of watching a sub-interval of an event, rather than whole bounded event. Other perception verbs in ASL that behave like WATCH in this respect are LOOK-AT and FEEL, provided FEEL is accompanied by a hand gesture to indicate the feeling of vibration on the hand or on the ear.[13]

(141) _____t
JOHN IX_i I WATCH IX_i CLEAN ROOM
*'I watched John clean the room.' (complement clause is bounded)
'I watched John cleaning the room.' (complement clause is unbounded)

Now consider SEE-type verbs. They apparently permit either interpretation for the verbal complement. It is possible to see the event of John's cleaning the room as a bounded whole. It is also possible to see just part of the event. Another perception verb in ASL that allows both interpretations for the verbal complement is PERCEIVE-on-ear. (ASL has other perception verbs, but they have different properties. For example, HEAR

[13] WATCH is made with a hand in the bent L handshape that twists away from the face; in the Texan variant, it is made with a C hand that contacts the chin on the back of the hand. LOOK-AT extends the index and middle fingers flat, palm down, with the fingertips pointing away from the body.

selects only for propositions, which do not have viewpoint, and LISTEN-TO selects only for a noun phrase.)[14]

(142) I SEE JOHN$_i$ (IX$_i$) CLEAN ROOM
'I saw John clean the room.' (complement clause is bounded)
'I saw John cleaning the room.' (complement clause is unbounded)

WATCH- and SEE-type verbs then differ in whether they allow one or both default interpretations for the embedded clause. This pattern is not unique to ASL, for it also appears in English. Smith (2003: 170) notes that English allows three kinds of perception verb complements: propositional, a 'bare' infinitive, and a gerundive. Each of these complements is illustrated below.

(143) a. John saw that the sun was shining. (propositional)
b. John saw Mary walk to school. (bare infinitive)
c. John saw Mary walking to school. (gerundive)

Propositions are distinct from events and are not subject to any viewpoint. The gerundive has imperfective viewpoint due to the progressive morpheme. Parsons (1990: 267) observes that some verbs of perception in English require the embedded clause to be in the progressive: *catch, detect, discern, find, glimpse*.

(144) a. * I caught John clean the room.
b. I caught John cleaning the room.

Other verbs of perception, like *see*, *hear*, and *feel*, allow a bare infinitival clause as a verbal complement in addition to the gerundive (see 143b). There is no overt

[14] SEE is similar to LOOK-AT except that the fingers point upward and the middle finger contacts the right cheek and moves away from it. PERCEIVE is made by bending the thumb, index and middle fingers, while the thumb contacts the face near the ear. HEAR is made by pointing an index finger to the ear. LISTEN-TO is made with a curved hand and with the thumb contacting the ear.

viewpoint morpheme - the progressive morpheme is not present, and there is no overt marker for perfective viewpoint. The consequence is that either interpretation is possible, i.e. viewpoint is neutral. Likewise, in ASL, SEE-type verbs allow either interpretation.

The question is, why is only an unbounded interpretation available for verbal complements of WATCH-type verbs, and why are both bounded and unbounded interpretations available for those complements of SEE-type verbs? The availability of either interpretation for the verbal complement of SEE is not expected by Bohnemeyer and Swift (2004) nor by Smith, Perkins and Fernald (2005) and Smith and Erbaugh (2005). The principle of event realization and the Temporal Schema Principle, if only the feature of telicity is used, predict just one interpretation depending on the telicity of the verbal complement. If it is telic, it should receive only a bounded reading, yet this is not always the case. Some verbs allow both interpretations as seen with SEE-type verbs, and only one interpretation is possible with WATCH-type verbs, namely the unbounded one, which is not predicted from the telicity of the verbal complement.

As described in the previous section for zero-marked clauses with temporal locating adverbs, the Temporal Schema Principle can provide an answer, provided that duration is used as one of the properties to determine the default interpretation. The above example with SEE involves a verbal complement that is an accomplishment. A different pattern emerges when the verbal complement is of a different situation type. If the verbal complement is an activity, an unbounded interpretation is strongly preferred for the verbal complement, as in (145a). When the verbal complement is an achievement, a bounded interpretation is more natural for the complement, as in (145b).

(145) a. I SEE JOHN$_i$ (IX$_i$) SMOKE OUTSIDE
? 'I saw John having smoked outside.'(complement clause is bounded)
'I saw John playing outside.' (complement clause is unbounded)

b. I SEE JOHN$_i$ (IX$_i$) ARRIVE HAMBURG
'I saw John having arrived in Hamburg.' (complement clause is bounded)

? ‘I saw John arriving in Hamburg.’ (complement clause is unbounded)

Each situation type presents a different pattern of default interpretation, which is explained by its temporal schema. The following analysis is one way to implement the Temporal Schema Principle. A sentence with a perception verb and a verbal complement refers to two events, the event of perceiving, and the event being perceived. If the perceived event is unbounded and durative (i.e. an activity), the duration of the event contains the time of perceiving. If the perceived event is bounded and instantaneous (i.e. an achievement), the time of the event coincides with the time of perceiving.

(146) a. SEE + Achievement

train arrive

<----------|----------> bounded

see

b. SEE + Activity

John play outside

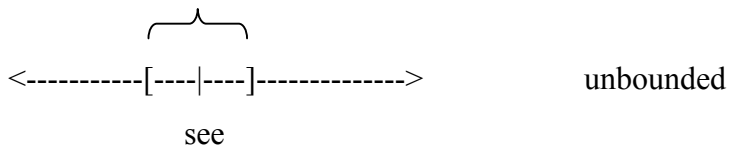
<----------(--(---)--)----------> unbounded

see

The Temporal Schema Principle similarly predicts both bounded and unbounded default readings for a zero-marked accomplishment clause when it appears as a complement of SEE. Like an activity, the time span of the accomplishment can contain the event of seeing and yield an unbounded reading. Like an achievement, the boundedness of the accomplishment can lead to placing the edge of the accomplishment before or at the time of seeing. This leads to a default bounded reading.

(147) SEE + Accomplishment

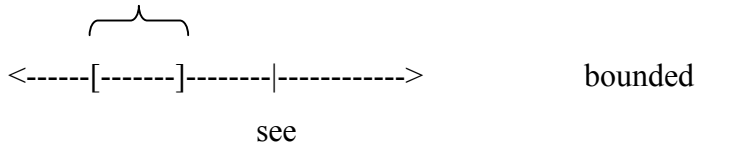
a. *John was cleaning the room*



unbounded

see

b. *John cleaned the room*



bounded

see

On the other hand, WATCH-type verbs only yield an unbounded interpretation for the verbal complement. This can be explained through their lexical semantics: the meaning of the verb is such that the event of watching has duration, so that it selects for a verbal complement that also has duration, as in (148a). If the verbal complement does not have duration, the feature is accommodated, as in (148b).

(148) a. I WATCH JOHN$_i$ (IX$_i$) PLAY OUTSIDE

? 'I watched John having played outside.' (clause is bounded)

'I watched John playing outside.' (clause is unbounded)

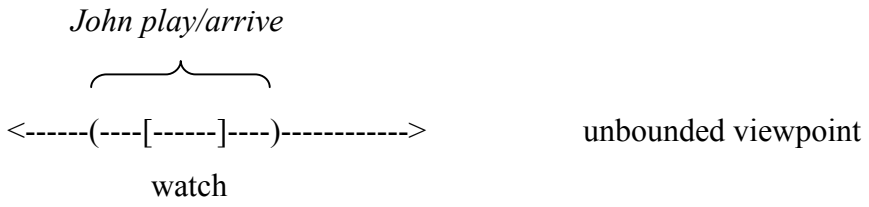
b. I WATCH JOHN$_i$ (IX$_i$) ARRIVE BOSTON

? 'I watched John having arrived in Boston.' (clause is bounded)

'I watched John arriving in Boston.' (clause is unbounded)

Then the event of watching is co-terminous with or properly contained inside the time span of the watched event. It does not matter whether the event is an activity, an achievement, or an accomplishment.

(149) WATCH + event



unbounded viewpoint

watch

In sum, the Temporal Schema Principle of Smith and Erbaugh (2005), as stated in (150), can predict the default interpretation of zero-marked clauses that appear with locating adverbs or that are embedded under verbs of perception. It requires no revision, as long as the feature of duration is used along with the feature of telicity to predict default interpretation. The principle is flexible enough to predict both bounded and unbounded readings in certain cases. The flexibility of the principle in this respect is one advantage that the principle has over other similar formulations of pragmatic principles like Bohnemeyer and Swift's (2004) principle of event realization. The Temporal Schema Principle does not apply to WATCH-type verbs, because they have a particular lexical semantics that constrains the interpretation of the verbal complement.

(150) Temporal Schema Principle

In a zero-marked clause, interpret a verb constellation according to the temporal schema of its situation type, unless there is explicit or contextual information to the contrary.

The feature of the temporal schema of a situation type that is relevant for interpretation is boundedness. In marked cases, duration is relevant as well.

4.4 Summary

This chapter has pursued several research questions regarding ASL: (i) how is perfectivity encoded, (ii) how is imperfectivity encoded, and (ii) what viewpoint occurs in the absence of overt marking?

The data presented suggest that clause-final FINISH encodes perfectivity in ASL, as seen by the fact that it passes the standard tests for perfectivity: it is odd to follow up sentences with clause-final FINISH with questions or assertions to the effect that the event continues, and sentences with clause-final FINISH advance narrative time. Clause-final FINISH then carries the meaning that the event denoted by the sentence is bounded. Sentences with pre-verbal FINISH are perfect; the perfect reading is one of an experiential reading. These sentences allow perfective viewpoint. This is seen through the fact that sentences with pre-verbal FINISH pass tests for both the perfect and the perfective.

A special form of imperfectivity is grammaticized in the language through the conative morpheme, which marks a particular form of imperfective: it focuses on the preliminary stages prior to an event. The conative reading is similarly marked by the imperfective form in other languages. ASL, however, does not grammaticize the general imperfective.

In the absence of an overt viewpoint morpheme (perfective FINISH and conative morpheme), an ASL sentence is zero-marked. Pragmatic principles constrain the default interpretations that are available for a zero-marked sentence: states and activities are unbounded, while semelfactives, achievements and accomplishments are bounded. Moreover, other information in the sentence or the surrounding context can override the default interpretation.

Chapter 5: Temporal Interpretation

Chapters 3 and 4 have discussed respectively the two components of the aspectual system of ASL, situation aspect and viewpoint aspect. This chapter turns to temporal interpretation in ASL. Temporal interpretation indicates where an event is located temporally with respect to other events or times. Studying temporal interpretation in ASL turns out to provide significant support for the current analysis of situation and viewpoint aspect, since temporal interpretation in ASL depends to a great degree on the aspectual system of the language. Thus, this chapter examines how temporal interpretation is achieved and in so doing, completes the picture of event structure in ASL. As part of background, the first section illustrates temporal interpretation in English, Mandarin Chinese and Navajo. Then the rest of the chapter turns to the main topic of how temporal interpretation is achieved in ASL.

5.1 Three patterns of temporal interpretation

There are three major patterns of temporal interpretation, each of which comes with its own pragmatic principles: deictic, anaphoric and narrative. Each one is characteristic of a certain discourse mode. Discourse mode is a way of structuring the text depending on its function. Smith (2003) discusses five discourse modes in all: Report, Description, Narrative, Information and Argument. Each discourse mode is associated with a set of linguistic properties. The first three discourse modes are relevant, since they affect temporal interpretation.

The deictic pattern of temporal interpretation is illustrated in three languages: English, Mandarin Chinese and Navajo. Then anaphoric and narrative patterns are illustrated for English and Mandarin Chinese. Even though English is a tensed language, Mandarin Chinese is a tenseless language, and Navajo has a mixed tense system, all of the patterns appear in all three languages. Thus the patterns are universally available and independent of whether there is a tense system. The section is largely based on Smith

(2003) for English; Smith and Erbaugh (2005) for Mandarin; and Smith, Perkins and Fernald (2003) for Navajo.

5.1.1 Deictic pattern

The deictic pattern of temporal interpretation represents the default way to determine the temporal location of a situation. The deictic pattern is based on the principle in (1). The deictic pattern is from the perspective of the speaker/signer; as a result, the temporal location of a situation is computed relative to utterance time.

(1) Deictic interpretation principle
a) Unbounded situations are located at utterance time
b) Bounded situations are located before utterance time

The rationale behind the principle is a combination of the Bounded Event Constraint in (2) and the Simplicity Constraint on Interpretation in (3). If a sentence describes an event as going on at the same time as utterance time, the event must be unbounded in order to be entertained (Kamp and Reyle 1993). The Bounded Event Constraint is then a "pragmatic convention of communication" (Smith and Erbaugh 2005). The constraint leaves two possible temporal locations for bounded events: past or future. The future is not a default due to the Simplicity Constraint on Interpretation. The future has an additional uncertainty factor not present in the past (Lyons 1977, Kamp and Reyle 1993). This leaves the past as the default location for bounded events, i.e. before utterance time. The Simplicity Constraint limits the inferences made by listeners based on Grice's (1975) second maxim of quantity: "do not make your contribution more informative than is necessary."

(2) Bounded Event Constraint
Bounded events are not located in the present.

(3) Simplicity Constraint on Interpretation

Choose the interpretation that requires the least additional information.

The deictic pattern is characteristic of the Report discourse mode. The Report mode is used to give an account of events from the perspective of the reporter at utterance time. In the following example from English, which is taken from the *New York Times* (2000), as cited in Smith (2004), the tenses are interpreted relative to the time of reporting, utterance time. The week referenced in the first sentence ended before the time of the article, while the events in the last two sentences are understood to be occurring at the time of the article.

(4) Report

A week that began in violence ended violently here, with bloody clashes in the West Bank and Gaza and intensified fighting in Southern Lebanon. Despite the violence, back-channel talks continued in Sweden. Israeli, Palestinian and American officials have characterized them as a serious and constructive dialogue on the process itself and on the final status issues. News accounts here say that Israel is offering as much as 90 percent of the West Bank to Palestinians, although it is difficult to assess what is really happening by the bargaining moves that are leaked.

5.1.1.1 Applying the deictic interpretation principle

To apply the principle of deictic interpretation, it is necessary to determine whether a situation is bounded or not. Viewpoint morphemes determine the boundedness of a situation. Imperfective viewpoint morphemes convey that the situation is unbounded, while perfective viewpoint morphemes indicate that the situation is bounded. If the sentence does not contain a viewpoint morpheme, i.e. if it is zero-marked, a pragmatic principle called the Temporal Schema Principle determines whether a situation is bounded or not. The Temporal Schema Principle was seen in Chapter 4 and is repeated

below in (5). The principle was used in Chapter 4 to indirectly predict viewpoint. The same principle is also used here to predict temporal location, which is the original intent of Smith and Erbaugh (2005) and Smith, Perkins and Fernald (2003).

(5) Temporal Schema Principle
In a zero-marked clause, interpret a verb constellation according to the temporal schema of its situation type, unless there is explicit or contextual information to the contrary.

For example, in Mandarin Chinese, sentences referring to unbounded situations are interpreted with a present temporal location by default. They include clauses with the imperfective morphemes *-zai* and *-zhe*; clauses with states or activity verb constellations; and generalizing/habitual clauses. A few of these are illustrated below; note the glosses are in the present tense. (See Klein, Li and Hendricks 2000, who also treat these morphemes in their framework. Their analysis is not inconsistent with the idea that the morphemes represent imperfective viewpoint.)

(6) Unbounded events interpreted as present (Smith and Erbaugh 2005)

a. . . . yiqie dou zai zhaoban helihua de moshi
everything all **ZAI** indiscriminately-imitate 'rationalization' DE model
'. . . everything is indiscriminately imitating some model of 'rationalization''

b. yan zhe bian fangzhi ji kuai xiyi ban . . .
edge **ZHE** side set several CL wash board
'Several washboards are set down along its sides . . .'

c. . . . xiong kuangfang di qianhou **yaobai** . . .
bear wild style DI front back sway
'. . . the bear is swaying wildly back and forth . . .'

d. xianggang **shi** shijie shang ziyou du zui gao de jingji tixi
Hong-Kong is world on freedom degree most high DE economic system
'Hong Kong has the freest economic system in the world.'

In Navajo, state verbs and event verbs with imperfective or progressive viewpoint are located in the present. The examples below are cited in Smith, Perkins, and Fernald (2003: 188).

(7) a. States

i. Díí tsé doo ndaaz da
this stone neg 3p-heavy(neut) neg
'This stone is not heavy.' (YM p. 654)

ii. Sitsilí chidí' góne' sidá\
my-little-brother car inside 3-p-sit(neut)
'My little brother sits/is sitting in the car.' (YM p.204)

b. Events

i. John Tségháhoodzánígóó naaghá
John Window Rock 3-p-**impf**-go around
'John is in Window Rock.' (e.g. 'hanging out')

ii. Nléí dzilbaahgóó hooltíil
that-one-over-there mountainside-along 3-p-**prog**-rain
'It's raining there along the mountainside.' (YM p. 461)

In contrast, sentences describing bounded events are interpreted with a past temporal location. In Mandarin Chinese, these sentences include telic event verb constellations as well as clauses with perfective morphemes *-le* and *-guo* and resultative

verb complements (RVCs), as illustrated in (8). The glosses in the examples below indicate that they are interpreted as past. (Cf. Klein, Li and Hendriks 2000 for an alternative analysis.) Similarly, in Navajo, event verb words with perfective viewpoint are located in the past, as shown in (9).

(8) Bounded events interpreted as past (Smith and Erbaugh 2005)

a. Gongan fa shiqu le ke xinfeng de qiyue jingshen
Public Order Ordinance lose **RVC LE** can believe in DE contract spirit
'The Public Order Ordinance lost all the spirit of a believable binding contract.'

b. wo fei dan xin li zancheng, erqie ye **ceng weiwen** . . .
I not only heart inside approve, but too once write article
'I not only approve, but I, too, once wrote articles . . ."

(9) Shimá sáni chizh la' bá nánijaa' dóó bá dídíiljéé'
My grandmother firewood some for-her 1p-**perf**-bring &for-her 1p-**perf**-build fire
'I bought back some firewood for my grandmother and built a fire for her.'
(YM p. 564, cited by Smith, Perkins and Fernald 2003: 187)

5.1.1.2 Overriding the deictic interpretation principle

It is possible to override the principle of deictic interpretation with explicit temporal information. The most common way to make temporal information explicit is through temporal adverbs. Since temporal adverbs play an important role in constraining temporal interpretation in ASL, this section provides some background about temporal adverbs based on Hornstein (1990), Klein (1994), and Smith (1997). Then the section illustrates how some of these temporal adverbs, along with other information, override the deictic principle of interpretation in Mandarin Chinese and Navajo.

Temporal adverbs can fill various syntactic roles: subject (*Yesterday was rainy*), predicate (*The deadline was yesterday*), and noun phrase modifier (*The lecture yesterday was interesting*). Here, I am interested only in temporal adverbs that affect the temporal interpretation of a sentence. Thus I focus on temporal adverbs that modify a sentence or a verb phrase, as in *Yesterday, John gave a talk.* The meaning of the temporal adverb depends on context.[15] For example, Klein (1994: 145) observes that the temporal adverb *on Tuesday* refers to different times in the sentences in (10). In (10a), *Tuesday* refers to Tuesdays in general, in (10b), it refers to the Tuesday following utterance time, and in (10c), it refers to the Tuesday preceding utterance time.

(10) a. On Tuesday, this shop is closed.
b. He will see him on Tuesday.
c. He saw him on Tuesday.

With this in mind, several types of temporal adverbs can be distinguished according to function: locating[16], durative, and frequency adverbs. Examples of each kind in English are presented in (11), again taken from Klein (1994: 149) and Smith (1997).

(11) Types of temporal adverbs
a. Locating: *yesterday, at five o'clock, at noon, in the night, before Mary left*
b. Durative: *briefly, for a while, during the autopsy, for an hour, from 1 to 3*
c. Frequency: *often, once in a while, no more than three or four times a year never, three times a week, every week*

[15] The meaning of a temporal adverb also depends on its syntactic position, since its syntactic position can affect its scope. For example, *sometimes* in the sentence *Lawyers sometimes smoke* quantifies over events or individuals, while *sometimes* in *Lawyers smoke sometimes* quantifies over events only. For another example of ambiguity due to scope, see (12). The different meanings of the adverb due to its syntactic position lie beyond the scope of the chapter, which is concerned with interaction between the meaning of the temporal adverb and the temporal interpretation of a sentence. For more details, see, e.g., Klein (1994: 148), von Fintel (1995), Cinque (1999) and Ernst (2002: 119ff).
[16] Klein (1994) uses the term 'positional adverb'. 'Locating adverb' is the term used by Smith (1997) and adopted here.

Locating adverbs select an interval from the set of intervals on the time line. Intervals have a position on the time line and have boundaries. A locating adverb like *today* provides the maximal boundaries within which a situation occurs. Thus *yesterday* specifies that the situation occurred in some undetermined interval within the day which precedes the day which includes utterance time (Klein 1994: 153). The intervals spell out reference time that is already provided by context, or pinpoint a reference time that is in contrast to another reference time.

The intervals may also refer to situation time. In the simplest cases, reference time and situation time are the same, so it does not matter which one is specified by the locating adverb. In English perfect sentences, however, situation time is before reference time, so they are distinct. Hornstein (1990: 21) demonstrates the ambiguity of the locating adverb in these sentences. In the example below, *yesterday* can modify situation time (E); the meaning is that the situation of John's eating the cake took place yesterday, as schematized in (12b). For ease of reading, Hornstein's schema has been transformed into the style of schema used here. *Yesterday* can also modify reference time (R); then the sentence would mean that the situation of John's eating the cake took place before yesterday - see (12c).

(12) a. John had eaten cake yesterday.

b.
```
        E     R     U            yesterday            E     R     U
<-----|------|------|--------> -------> <-----|------|------|-------->
                                                  yesterday
```
meaning: John's eating of the cake occurred yesterday

c.
```
        E     R     U            yesterday            E     R     U
<-----|------|------|--------> -------> <-----|------|------|-------->
                                                        yesterday
```
meaning: John's eating of the cake was prior to yesterday

Durative adverbs specify the length of the time span for the situation, i.e. they specify the length of situation time. For example, *For a while, John studied linguistics* means that the time span of John's studying linguistics was *for a while*, however it is defined. Smith (1997) distinguishes between durative and completive adverbs. Completive adverbs locate telic events at an interval, the end of which the event is completed. Examples include *in an hour* and *within an hour*. For example, *John walked to school within an hour* means that the event transpired in an interval that was not longer than an hour. Not all languages distinguish durative and completive adverbs, for example Chinese and Navajo (Smith: 112).

Frequency adverbs, also known as adverbs of quantification, specify the frequency of the situation. *John sometimes cooked salmon* means that there were some time spans before utterance time such that John cooked salmon in these time spans.

The Mandarin Chinese examples in (13a) show that future-oriented locating adverbs (along with future modals like *will*) locate bounded events and unbounded situations in the future with a modal or a future-oriented locating adverb. In addition, unbounded situations are placed in the past with a time adverbial, as in (13b).

(13) a. Locating situations in the future in Mandarin
Neidi jiangyu ben zhou lui quanmian jin **yong** jiyongjiqi de
mainland about to this Saturday completely forbid use disposable DE

fabao canju
polystrene food-containers
'This coming Saturday the mainland will completely ban the use of disposable polystrene food containers'

b. Locating situations in the past in Mandarin
Jinnian, . . . Xianggang he Shenzhen liangdi jiaotong fangbian
Recent-years, Hong Kong and Shenzhen 2-place transportation convenient
'In recent years, . . . transportation between HK and Sh. was convenient'

There are parallel examples in Navajo. The language has one inflectional morpheme for future mode, temporal particles for past and future, and temporal adverbs. All of them directly locate a situation and may override the deictic principle. The examples are cited in Smith, Perkins and Fernald (2003: 177-178).

(14) a. Locating situations in the future in Navajo

i. Future mode inflectional morpheme:
Deeshchah
1p-**Fut**-cry
'I will cry.'

ii. Future particle
'Asháa **dooleel**
1p-impf-eat **FPrt**
'I will be eating.'

iii. Future adverb
Ninádeezidgo Na'nizhoozhígóó deeyá
next-month Gallup-to 3-p-go-perf
'He is going to Gallup next month.'

b. Locating situations in the past in Navajo

i. Past particle *nt'ee*
'Asháá **nt'éé'**…
ip-impf-eat **PPrt**
'I was eating.'

ii. Past particle *-dáá*

Ashkii nishlinée**dáá'**…

boy 1p-be(neut)+**PPTrt**

'When I was a boy...'

iii. Past adverb

Adáádáá'Jáan Tségháhoodzánígóó naaghá

yesterday John Window Rock around-3p-impf-go

'John was at Window Rock yesterday.'

5.1.2 Anaphoric pattern

Under the deictic pattern of temporal interpretation, event time is equal to reference time, and the interpretation hinges on the relationship between reference time and utterance time. There are two other ways to interpret temporal location, anaphoric and narrative. The anaphoric pattern is discussed in this section, and the narrative pattern in the next.

Anaphoric interpretation means that a reference time has been set up, and all the situations are related back to that reference time. The reference time is either inferred from prior context or specified with a locating adverb. States and unbounded events are interpreted relative to this reference time rather than relative to utterance time (as in deictic interpretation). Thus all the unbounded situations are understood to occur at this time. The anaphoric principle of interpretation, taken from Smith (2004), is formalized below. R stands for reference time.

(15) Static Interpretation Principle

i. States and unbounded events are located at an established time.

ii. R in current sentence is equal to R of immediately preceding sentence.

This pattern of interpretation often occurs in the discourse mode of Description. The Description mode portrays a scene and mainly contains unbounded events, states and general statives. The tenses are interpreted anaphorically with respect to the same reference time. Thus all the situations are understood to occur at the same time. Description is illustrated in the passage below from Eudora Welty, which is again due to Smith (2004).

(16) Description

In the passenger car every window was propped open with a stick of kindling wood. A breeze blew through, hot and then cool, fragrant of the woods and yellow flowers and of the train. The yellow butterflies flew in at any window, out at any other, and outdoors one of them could keep up with the train, which then seemed to be racing with a butterfly. Overhead a black lamp in which a circle of flowers had been cut out swung round and round on a chain as the car rocked from side to side, sending down dainty drifts of kerosene smell.

An example of a Description passage in Mandarin Chinese follows. In this example, the reference time is fixed by the event in the first clause. The rest of the clauses describe states, which are understood to occur around this reference time. This pattern is different than the deictic pattern, under which states would be located around utterance time.

(17) a. . . . zuo zhongren de Wei Lao Pozi dai ta jinlai le
go-between DE Wei Old Wife bring her enter-come LE

b. tou shang ze zhe bai tousheng, wu qun, lan jia ao
head on braid ZHE white cord, black skirt, blue padded jacket

c. nianji dayue ershi luiqi, lian se qinghuang
age about 20 6 7, face color pale

d. dan liang jia que hai shi hong de
but two cheeks still be red DE

['. . . old Mrs. Wei, who acted as go-between, brought her in. Her hair was tied with white bands, she wore a black skirt, blue jacket, and pale green bodice, and was about 26, with a pale face but rosy cheeks.']

(Smith and Erbaugh 2005: 747)

5.1.3 Narrative pattern - characteristic of Narrative mode

The continuity (or narrative) pattern of interpretation differs from the anaphoric pattern in that the situations are related to each other and reference time is shifted for each situation. Bounded events or adverbs advance reference time. Advancement is achieved through the following Narrative Dynamism Principle by Smith (2004) (cf. Dowty 1986 and Hinrichs 1986). As before, R stands for reference time.

(18) Narrative Dynamism Principle
i. Bounded event clauses advance narrative time
ii. States and unbounded events do not advance narrative time
iii. If e is a bounded event, R of current sentence is after R of immediately preceding sentence.

The narrative pattern of temporal interpretation is prominent in the discourse mode of Narrative. The following example of a Narrative in English appears in Smith (2004). The two sentences do not necessarily occur at the same time. The initial reference time is stated explicitly in the beginning ('one night in November 1961'). The first event (going into the tub room) occurs at the initial reference time. The second event (turning

on the light) occurs at a later time. The state (a rat sitting on the machine) occurs at the later time as well.

(19) Narrative

One night in November 1961, Alice went into the tub room to put some clothes in her old wringer washing machine. When she turned on the light, there was a rat the size of a small cat sitting on the machine.(J. Anthony Lukas)

Another example is seen in (20), which comes from Mandarin Chinese. The fragment has three clauses. The clause in (20a) describes an event of pulling out the hand. This event is located at a reference time that is provided by context. The clause in (20b) then describes a state ('the hand held a package'), which is temporally interpreted at the same reference time as the first event. Then the clause in (20c) describes a second event - handing over the package - which occurs at a reference time following the initial reference time.

(20) a. ta hao rongyi ququ zhezhe de huichu shou lai
he with difficulty turn turn twist twist DE pull out hand come

b. shou li jiu you yige xiaoxiao de changfang bao, kuilyu se de
hand in just have a small small rectangular package sunflower green DE

c. yi jing di gei Si Taitai
one movement give to Si Mrs.

['With difficult twists and turns he pulled his hand out of his clothing. It held a small rectangular package of sunflower green. In one movement, he handed it to his wife.']

(Smith and Erbaugh 2005: 746)

5.2 Deictic pattern in ASL

Given that there are three patterns which come with specific pragmatic principles about temporal interpretation, one major research question arises which is pursued in this chapter: how is temporal interpretation achieved in ASL? This chapter pursues that question by considering in turn how the deictic, anaphoric, and narrative patterns of temporal interpretation occur in the language. For each case, the pattern is illustrated with temporal schema.

5.2.1 Applying the deictic principle

This section shows that the Deictic Principle predicts temporal interpretation in default cases. The principle locates unbounded situations at utterance time and bounded events before utterance time. They are examined in turn.

5.2.1.1 Unbounded situations are in the present

The first pragmatic default, as stated under the Deictic Principle in (1), is that unbounded situations are located in the present. Unbounded situations include unbounded events and states. Unbounded events are expressed zero-marked activity verb constellations. They are atelic and therefore unbounded. It follows that they are interpreted in the present by default.

(21) Zero-marked activity verb constellations are in the present

a. JOHN WALK
'John is walking.'

b. JOHN EXPLAIN HISTORY
'John is explaining history.'

Sentences marked with the continuative and iterative morphemes are also zero-marked with respect to viewpoint. Recall from Chapter 4 that they are unbounded according to the Temporal Schema Principle. As predicted, the default interpretation for the sentences is in the present.

(22) Sentences with continuative and iterative morphemes are in the present

a. JOHN COOK+continuative
'John is cooking continuously.'

b. JOHN COOK+iterative
'John is cooking repeatedly.'

Other sentences that are unbounded according to the Temporal Schema Principle are zero-marked stative clauses. Stative verb constellations are correctly predicted to be interpreted with a default present temporal location.

(23) Zero-marked stative verb constellations are in the present

a. JOHN KNOW HISTORY
'John knows history.'

b. JOHN LIKE CHOCOLATE
'John likes chocolate.'

The habitual morpheme, which was first encountered in Chapter 2, coerces a state, as explained in Chapter 3. The pragmatic default then predicts sentences with the habitual morpheme to be in the present. The examples below show this to be correct. Normally the verb constellation I GO CHURCH is an accomplishment which would be interpreted in the past by default (see next subsection), but when the habitual morpheme is attached to the verb, the sentence becomes an habitual sentence which describes a

regularity and is naturally interpreted as being in the present in the absence of any other context. Recall from section 3.8.2 that these sentences can co-occur with POSS+ and TEND without affecting the meaning.

(24) Stative sentences formed by the habitual morpheme are in the present

a. I GO+habitual CHURCH
'I regularly go to church.'

___rhq

b. POSS+ STUDY+habitual WHAT CHEMISTRY
'I study chemistry (for a living).'

Recall also from Chapter 3 that generalizing sentences in ASL may be formed with the null operator for generalizing sentences, with a frequency adverb like ALWAYS and/or with the particles TEND and POSS+. These too are interpreted as being in the present, which follows from the fact that they are coerced states and therefore subject to the pragmatic default that states are placed in the present.

(25) Generalizing sentences are in the present

a. $JOHN_i$ (ALWAYS) $_iHELP_j$ MY $FRIEND_j$
'John is always helping my friend.'

b. JOHN (ALWAYS) WRITE PAPER
'John is always writing papers.'

In sum, zero-marked activity clauses and stative clauses express unbounded situations which receive a default temporal location at utterance time. This location is represented in the schema below.

(26) Temporal schema for present temporal location

E, R, U

<----------|---------->

5.2.1.2 Bounded situations are in the past

The second part of the Deictic Principle says that bounded events are interpreted as occurring before utterance time. As mentioned in section 5.1.1, this default interpretation is due to the combination of the Bounded Event Constraint, which eliminates present location, and the Simplicity Constraint on Interpretation, which eliminates future location. Many sentences describe bounded events and fall under this pragmatic default.

One set of sentences that fall under this default includes those that are marked with the perfective viewpoint morpheme FINISH. As shown in Chapter 4, perfective FINISH, when it is clause-final, functions to portray a bounded view of an event. It follows that verb constellations with perfective FINISH are understood as past by the pragmatic default. Note that COOK is an activity; the previous section shows that a zero-marked activity is interpreted in the present by default, but the insertion of perfective FINISH bounds the temporal schema and therefore triggers a default past reading.

(27) Sentences with perfective viewpoint morpheme are in the past

a. JOHN CLEAN ROOM **FINISH**
'John cleaned the room.'

b. JOHN COOK **FINISH**
'John cooked.'

Another set of sentences that fall under the default are zero-marked achievement and accomplishment verb constellations. They have a telic feature, and it follows from

the Temporal Schema Principle that they are bounded. The glosses for the following examples suggest that the default interpretation for these situation types is indeed in the past.

(28) Zero-marked achievements and accomplishments are in the past

a. JOHN ARRIVE ONE-HOUR-twist
'John arrived in one hour.'

b. JOHN COOK S-A-L-M-O-N
'John cooked salmon.'

One subcase of accomplishment verb constellations includes those with the hold morpheme. As mentioned in Chapter 3, the hold morpheme contributes a final endpoint to an event. By the Temporal Schema Principle, the situation is bounded. Accordingly, verb constellations with the hold morpheme are interpreted as taking place in the past by default. In the second sentence below, the hold interrupts through the closing movement of the sign, indicating that only half the quantity, as opposed to the full quantity, was consumed.

(29) Accomplishments formed by the hold morpheme are in the past

a. BRIDGE(ground) BOAT(figure) VEHICLE-CL+MOV+hold
'The boat moved, and came to a point under the bridge.'

b. BOY IX_i DRINK WATER EXTENT-down+hold
'A boy there drank up to half a glass of water.'

In sum, sentences with the perfective viewpoint morpheme FINISH, sentences with an achievement verb, and sentences with an accomplishment verb convey bounded

situations and are interpreted to be in the past, i.e. before utterance time. This reading is shown in the temporal schema below.

(30) Temporal schema for past temporal location

```
        E, R      U
<--------|-------|---------------->
```

5.2.1.3 Discussion

There are two more groups of constructions which are also interpreted in the past by default: zero-marked semelfactive verb constellations and verb constellations marked with the conative imperfective morpheme.

Semelfactive verb constellations are atelic. Thus, according to the Temporal Schema Principle, they are unbounded, and therefore should be interpreted in the present by default according to the Deictic Principle. However, this is not the case. As shown in (31), they receive a past default reading. The past reading can be explained if the Temporal Schema Principle also takes into account the temporal feature of duration in addition to the feature of telicity, as suggested in Chapter 4. That is, if a situation does not have the feature of duration, it is considered bounded. Then, according to a slight re-interpretation of the Temporal Schema Principle, semelfactives are actually bounded because they consist of a single internal stage. This is consistent with Smith (1997: 29) who says that they are "intrinsically bounded." The boundedness property then explains the past readings below.

(31) Zero-marked semelfactives are in the past

JOHN FOOT-TAP

'John just tapped his foot.'

As discussed in Chapters 3, semelfactives can be coerced into activities by the iterative morpheme. The iterative rule triggers a series of events that is ongoing and unbounded. Thus semelfactive verb constellations marked with the iterative morpheme behave like activity verb constellations and are interpreted as happening in the present by default, even though a semelfactive is normally interpreted in the past.

(32) Derived activities with the iterative morpheme are in the present

a. BOY IX_i COUGH+iterative
'A boy there keeps coughing.'

b. BOY IX_i CLAP-HAND+iterative
'A boy there keeps clapping.'

The next group of verb constellation are sentences marked with the conative morpheme. The conative morpheme was argued in Chapter 4 to mark a special type of imperfective viewpoint. In general, events with an imperfective viewpoint are unbounded and therefore usually interpreted in the present (Smith and Erbaugh 2005, Smith, Perkins and Fernald 2003). However verb constellations with the conative morpheme are interpreted in the past by default, as shown below.

(33) Sentences with the conative morpheme are in the past

a. PAPER conative+RUN-OUT RUN-OUT
'It took some time before the stack of paper finally ran out.'
Context: There was a large quantity of paper in a copying machine, and it took a while to use up all of the paper. When it finally ran out, a new stack of paper was loaded into the copier.

b. I READY LEAVE conative+GO ("oh well" gesture) STAY CHAT
'(At the end of a Deaf gathering) I was all ready to leave. I was attempting to go. I gave up and ended up staying and chatting.'

As explained in Chapter 4, the conative morpheme focuses on the preliminary stages prior to an event. It does not entail anything about the culmination of the event. Since the conative morpheme focuses on a definite set of stages which is not ongoing, the sentence is located in the past. Even though the conative is an imperfective viewpoint morpheme, it does not mark general imperfective but rather a marked type of imperfective. Situations with the general imperfective viewpoint are unbounded, but situations with this marked imperfective viewpoint are not necessarily viewed as ongoing and therefore do not necessarily receive a default present reading.

5.2.2 Sentences with modals and temporal adverbs

In all of the previous examples, temporal interpretation has been implicit. It is also possible to provide explicit temporal information in ASL through temporal adverbs and through one future modal. The next section considers examples in which the temporal information contributed by the temporal adverbs is consistent with the default temporal interpretation predicted for the sentence according to the deictic principle. In these cases, the temporal adverbs function to further specify temporal location. However, temporal adverbs and the future modal may also override the predictions of the deictic principle. This is the focus of the following section.

5.2.2.1 Consistent with deictic principle

Temporal adverbs contribute specific temporal information. Recall there are several types of temporal adverbs, depending on their function. Examples of each kind in ASL are provided in (34). As explained in Chapter 3, there is little evidence to distinguish between durative and completive adverbs in ASL.

(34) a. Locating adverbials: TODAY, NEXT-WEEK, 3-O'-CLOCK
b. Durative adverbials: ONE-DAY, TWO-WEEKS, ONE-HOUR-durative
c. Frequency adverbials: ALWAYS, OFTEN, SOMETIMES

The function of locating adverbs is to fix reference time, and depending on the meaning of the adverb, the reference time can be before, after, or at the same time as utterance time. There is a temporal adverb which locates a situation at utterance time, specifically NOW. It appears with sentences that describe unbounded situations as in (35a); while the deictic principle already predicts them to be in the present, the temporal adverb emphasizes that the reference time is at utterance time. There are also adverbs that locate situations in the past: PAST, RECENT-PAST, FORMERLY, YESTERDAY, FEW-DAY-PAST, LAST-WEEK, TWO-WEEK-PAST, LAST-YEAR and TWO-YEAR-PAST (Baker-Shenk and Cokely 1980, Neidle, Kegl, MacLaughlin, Bahan and Lee 2000).[17] They appear with sentences that describe bounded events, as shown in (35b). Even though the deictic principle already interprets them to be in the past, these temporal adverbs further specify the reference time/situation time.

(35) Locating adverbs consistent with deictic principle

a. NOW JOHN WALK
'Right now, John is walking.'

b. PAST-NIGHT, JOHN COOK S-A-L-M-O-N
'Last night, John cooked salmon.'

Durative adverbs impose maximal boundaries on the time span of the event. By the Temporal Schema Principle, these events are taken to be bounded. Durative adverbs appear with events that are intrinsically bounded. As expected, there is a strong pragmatic preference in ASL to interpret the duration as having occurred by utterance time.

[17] Neidle et al. (2000) take some of these forms to be lexical tense markers. For reasons explained in Chapter 1, they are assumed to be adverbs here.

(36) Durative adverbs consistent with deictic principle (= past)

_____t

JOHN ONE-HOUR-durative WRITE PAPER

'John wrote the paper in one hour.'

b. _____t

JOHN TWENTY MINUTE COOK S-A-L-M-O-N

'John cooked the salmon in twenty minutes.'

Like durative adverbs, frequency adverbs do not fix reference time. Rather, they indicate how many time spans that the event occurs in. Frequency adverbials often turn sentences into generalizing sentences. Since generalizing sentences describe a pattern of situations that is ongoing, the pattern of situations is taken to be unbounded and therefore located around utterance time by the deictic principle. Frequency adverbs appear with activity verbs which already describe unbounded situations and do not affect their temporal interpretation.

(37) Frequency adverb consistent with deictic principle (= present)

_____t

JOHN OFTEN COOK

'John cooks often.'

5.2.2.2 Overriding deictic principle

It is possible to override the deictic principle through the use of temporal adverbs or the future modal. This section shows two different ways that the deictic principle is overridden. Then it illustrates how some bounded events can be interpreted in the present only if they become generalized, e.g. with a frequency adverb.

The deictic principle says that unbounded situations are in the present and bounded situations are in the past. However, it is possible to override this by placing both

unbounded and bounded situations in the future through the modal WILL. There is also a fingerspelled version, W-I-L-L, which is included with WILL in the following discussion. The modal places situations after utterance time.

(38) States/unbounded events located in the future with WILL

a. JOHN WILL WALK
'John will walk.'

b. JOHN WILL LIKE CHOCOLATE
'John will like chocolate.'

(39) Bounded events located in the future with WILL

a. JOHN WILL ARRIVE NEW-YORK
'John will arrive in New York.'

b. JOHN WILL COOK S-A-L-M-O-N
'John will cook salmon.'

The modal WILL is optional. It does not have to be used when it is clear from the context that the temporal location of the event is in the future, e.g. if there is already a future-oriented temporal adverb, as shown below.

(40) TOMORROW JOHN (WILL) ARRIVE NEW-YORK
'Tomorrow, John will arrive in New York.'

Future-oriented locating adverbs also place situations in the future. In ASL, examples of future-oriented locating adverbs are SOON, LATER, TOMORROW, FEW-DAY-FUTURE, NEXT-WEEK, TWO-WEEK-FUTURE, NEXT-YEAR, and TWO-

YEAR-FUTURE, among many more (e.g., Baker-Shenk and Cokely 1980). The adverbs specify that the reference time (and situation time) are after utterance time.

(41) States/unbounded events located in the future with locating adverb

a. NEXT-WEEK JOHN (WILL) LIKE CHOCOLATE
'(John does not like chocolate now.) Next week, John will like chocolate.'

b. NEXT-WEEK JOHN (WILL) WALK
'(John is not walking now.) Next week, John will walk.'

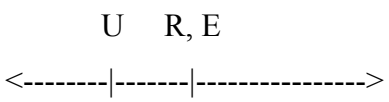
(42) Bounded events located in the future with locating adverb

a. TOMORROW JOHN (WILL) ARRIVE NEW-YORK
'Tomorrow, John will arrive in New York.'

b. TOMORROW JOHN (WILL) COOK S-A-L-M-O-N
'Tomorrow, John will cook salmon.'

The temporal schema for locating a situation in the future is given below. The reference time is equal to situation time and follows utterance time.

(43) Temporal schema for future temporal location



The second way to override the deictic principle is to place unbounded situations in the past, i.e. before utterance time. Normally, the deictic principle places them in the present. ASL uses past-oriented locating adverbs to place unbounded situations in the past, as shown in (44). In addition, it is possible to use a durative/completive adverb to

provide maximal boundaries for the time span of a state or unbounded event and thereby indirectly bound it. Then, the state or unbounded event is located in the past according to the Temporal Schema Principle, as seen in (45). The temporal schema for the past is the same as that in (30).

(44) States/unbounded events located in the past with locating adverb

a. LAST-YEAR JOHN LIKE CHOCOLATE
'Last year, John liked chocolate (but not anymore).'

b. YESTERDAY JOHN WALK
'Yesterday, John walked (but now he can't because he broke his leg).'

(45) States/unbounded events located in the past with durative adverb

a. FIVE YEAR SINCE JOHN LIKE CHOCOLATE
'For five years, John liked chocolate.'

b. ALL-WEEK JOHN SWIM
'John swam all week.'

According to the Bounded Event Constraint, bounded events cannot be located in the present. Bounded events can be generalized. Chapter 3 has discussed several ways to coerce a generalizing sentence on a telic verb constellation. One of them is to add a frequency adverb like ALWAYS. The sentence is no longer about a bounded event but rather about a pattern of (bounded) events. The Bounded Event Constraint then does not apply. The sentence behaves like a stative sentence in that it is unbounded and therefore interpreted in the present according to the Temporal Schema Principle. The example in (46) shows this to be correct. The temporal schema for the present reading is the same as in (26).

(46) Bounded events located in the present only if become a generalizing sentence

LONGHORNS ALWAYS WIN GAME

'The Longhorns always win (football) games.'

Frequency adverbs are one way to turn a sentence about a bounded event into a generalizing state. However, as just shown above, it is possible to override the deictic principle and locate unbounded states in the past or in the future. This is the case for generalizing sentences made with frequency adverbs, provided that a locating adverb is inserted before the frequency adverb, as in (47)/

(47) LAST-YEAR LONGHORNS ALWAYS WIN GAME

'Last year, the Longhorns always won (football) games.'

5.2.3 Summary

In sum, the following constructions, which represent unbounded situations, are located in the present by default according to the deictic principle. Below the list is a temporal schema illustrating the present.

(48) a. Situations, located in the present, are expressed in ASL by

i) Zero-marked activity verb constellations

ii) Zero-marked verb constellations with the continuative morpheme

iii) Zero-marked verb constellations with the iterative morpheme

iv) Zero-marked state verb constellations, including:

- clauses with habitual morpheme
- generalizing clauses

b. R, U, E

<----------|---------->

Several constructions in ASL are interpreted in the past by default according to the deictic principle. Again, there is a temporal schema below the list which shows the 'past' relation.

(49) a. Situations located in the past, are expressed in ASL by
i) Clauses with perfective viewpoint morpheme FINISH
ii) Clauses with conative morpheme
iii) Zero-marked semelfactive verb constellations
iv) Zero-marked achievement verb constellations
v) Zero-marked accomplishment verb constellations, including clauses with hold morpheme

b. R, E U
<--------|-------|---------->

Finally, it is possible to override the deictic principle with temporal adverbs and a future modal. They can be used to locate unbounded and bounded situations in the future and unbounded situations in the past.

5.3 Anaphoric pattern in ASL

This section now turns to the second major pattern of temporal interpretation, anaphoric. Unlike the deictic pattern, which relates situation time to utterance time, the anaphoric pattern relates situation time to reference time, which may or may not be the same as utterance time. According to the static principle, repeated below as (50), states and unbounded events are interpreted relative to this reference time. Thus all the unbounded situations are understood to occur at this time.

(50) Static Interpretation Principle
i. States and unbounded events are located at an established time.
ii. R in current sentence is equal to R of immediately preceding sentence.

As in English and Mandarin Chinese, the anaphoric pattern is common in the discourse mode of Description, and it is no different for ASL. Below, two fragments of ASL texts in Description mode are presented. The first example is taken from Baker-Shenk and Cokely (1980) and features a signer describing a table in his apartment. Classifier predicates are a common way to describe an entity in ASL, and this example includes one such classifier predicate. Following the topic ('my apartment'), there are four stative clauses. The first stative clause establishes the existence of a table, and the rest of the clauses describe different features of the table. The temporal schema for the fragment is given in (52) and shows that all four clauses are tied to the same reference time. Since there is no prior context indicating the value of this reference time, it is contextually assumed to be at utterance time.

(51) Context: The signer and a friend both have new apartments. The friend has been describing the dining room in his apartment. Then the signer says:

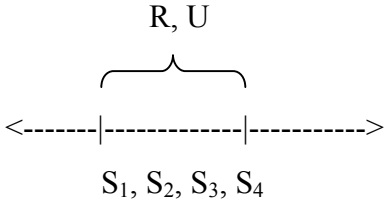
_____t			(gaze at 'table'	) pursed lips
MY	A-P-T	HAVE	TABLE	$1_{outline}$-CL-center:'circular, medium size'

INDEX-down,center GLASS, FINEwiggle

'(In) my apartment, there is a table. It is round, smooth and medium size. It (is made of) glass. It's really nice.'

(Baker-Shenk and Cokely 1980: 315)

(52) Temporal schema for description in (51)



S_1 = there is a table in my apt.
S_2 = table is round, smooth, medium
S_3 = table is made of glass
S_4 = table is really nice

The next fragment describes what John did on a particular day. It opens with a locating temporal adverb, YESTERDAY, which fixes the reference time. Three clauses follow, each of which describes an unbounded event: running, walking and resting. Then the last clause gives a descriptive comment on the day in the form of a stative. According to the Static Principle, the events and state are located inside the same the reference time, as shown in the temporal schema in (54). Since the they are located inside the same interval, they can receive a default order which corresponds to the order that they are listed. Alternatively, they can receive an 'unordered list' reading of events in which the relative order of the events does not matter. The sentence in (53) could be true if John ran, walked, and rested in that order but it could also be true if John walked first, then rested and then ran.

(53) JOHN$_i$ YESTERDAY DO ++ _____rhq
pro$_i$ RUN. pro$_i$ WALK. pro$_i$ REST. NICE DAY
'Yesterday, what John did was running, walking, and resting. It was a nice day.'

(54) Temporal schema for description in (53)

R = yesterday U

<----|----------|--------|------>

E$_1$, E$_2$, E$_3$, S$_1$

E$_1$ = running
E$_2$ = walking
E$_3$ = resting
S$_4$ = nice day

5.3.1 Temporal adverbs on a "time line"

Locating adverbs in ASL are produced like other lexical signs. In addition, ASL allows the option of producing locating adverbs in signing space. As briefly defined in Chapter 1, signing space refers to the physical area in front of the signer. The signer

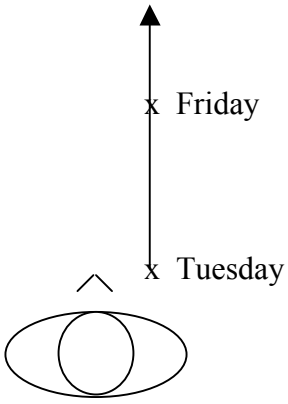
imagines "time lines" in this area and uses them to show temporal relations (Friedman 1975, Cogen 1977, Baker-Shenk and Cokely 1980).

Emmorey (2001), following Engberg-Pedersen's (1993) analysis of Danish Sign Language, recognizes three time lines in ASL. I analyze one example for each time line and show that these time lines all draw on the same metaphor for understanding time: the Moving Ego. According to this metaphor, "the world moves through time toward the future: the future is ahead on the highway of time, the past is behind" (Clark 1973: 50, cited in Smith 1997: 99). ASL exploits this metaphor by extending the use of signing space to the temporal domain. Normally, signing space is used to talk about entities located at spatial locations. I argue that time lines extend these locations in signing space to represent reference time.[18] Since the signer can 'refer' back to the representation of reference time in signing space to anchor the temporal location of events and states, I place the discussion of time lines under the anaphoric pattern of temporal interpretation in ASL.

The example for the first line is from Emmorey (2001: 109): the signer signs TUESDAY near the body, and then signs FRIDAY further down the line extending from behind the signer to a point in front of the signer. This is schematized from a bird's eye view in (55). The time line follows the metaphor: time is fixed, while the world moves along the time line from behind to the front. Then the location of Friday, which is further down the line from the location of Tuesday in (55), indicates that Friday follows Tuesday. In terms of temporal interpretation, TUESDAY and FRIDAY are temporal adverbs that fix reference time, as shown in the temporal schema in (56).

[18] The use of signing space, which is rooted in the spatial domain, can be extended to the temporal domain. I am not aware of metaphorical extensions to other domains like likelihood, e.g. as associated with the English word *even*.

(55)



(56)

U R_1, E_1 R_2, E_2

<-----|--------|----------|---------->

Tuesday Friday

E_1 = pass out review sheet

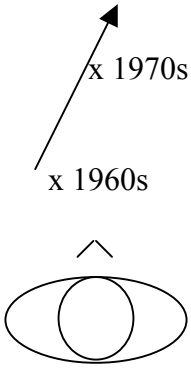
E_2 = give out test

There are locating adverbs like TOMORROW and YESTERDAY whose direction of movement is motivated by this time line. However, that movement has become lexicalized. The movement in TOMORROW twists the hand forward, and that in YESTERDAY moves it backward. In addition, the movement in durative adverbs like SINCE-THEN, UP-TO-NOW, and FROM-NOW-ON is also motivated by the same timeline but also lexicalized. For instance, the movement in SINCE-THEN moves the hands from the shoulder, twisting them so that the fingers land in a spot in front of the signer.

In the example for the second timeline, which is originally provided by Winston (1989) and cited in Emmorey (2001: 110), a signer sets a reference time as the 1970s. Then the signer steps backwards on the line to refer to the 1960s. After narrating about events that took place in the 1960s, the signer moves back on the line to narrate events in the 1970s and afterwards. This is schematized in (57). This example shows that it is possible to set up a reference time with one temporal adverb and then interpret the second

temporal adverb with respect to the reference time, as shown in the temporal schema in (58).

(57)

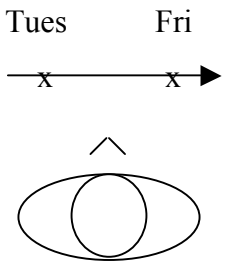


(58)

	R_1, E_1 R_2, E_2 U	
<-----|---------|----------|-->		E_1 = events during 1960s
1960s 1970s		E_2 = events during 1970s

Another way to set up reference time is to evoke an imaginary calendar page for a given month in front of the signer. In the example from Emmorey (2001: 112), the movement can trace a horizontal line across the 'calendar space' to indicate a week as in MONDAY-TO-FRIDAY, or the signer's movement can trace a vertical line down a column of the 'calendar space' to indicate a weekly event, like EVERY-MONDAY or EVERY-OTHER-MONDAY. If TUESDAY is signed on the left and FRIDAY to the right, as schematized in (59), it means the Friday following Tuesday. TUESDAY and FRIDAY still function as temporal adverbs that set reference time on the temporal schema in (60).

(59) Time lines in ASL



signer

U R_1, E_1 R_2, E_2

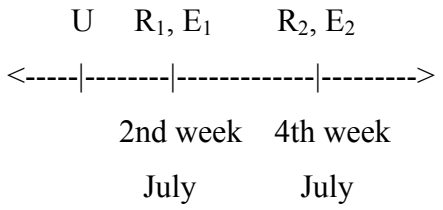
(60) <-----|--------|----------|---------> E_1 = pass out review sheet

Tuesday Friday E_2 = give out test

Another means for setting up reference time that is based on the metaphor of a calendar page uses the nondominant hand. Liddell (2003: 235ff) calls this form the FOUR-WEEK-LIST buoy. Each finger represents one week of the month, as indicated in (61). By rubbing the dominant index finger against one of the nondominant fingers, the signer refers to the corresponding week. For example, the signer sets up the reference time by signing J-U-L-Y, then brings up the nondominant hand, palm facing the signer, and spreads the fingers apart. To indicate that the meeting is moved from the second week to the fourth week, the sign for MOVE goes from the middle finger (representing the second week) to the pinky (representing the fourth week). The particular weeks of the month function to set up reference times, as illustrated in (62).

(61) index finger --> first week of month
middle finger --> second week of month
ring finger --> third week of month
pinky finger --> fourth week of month

(62)



E_1 = meeting as originally scheduled

E_2 = meeting as postponed

The FOUR-LIST buoy can be used to talk about not only the weeks of a month, but also other lists, such as the levels of an undergraduate career, as in (63). To refer to a particular year, the signer points to the fingertip of the nondominant finger. The particular year can be used as a predicate. For instance, to say 'I am a junior', the signer points to herself and then points to the index finger on the nondominant hand. However, the years can function as reference times as well. To say something like 'In junior year, I had to decide my major,' the signer first points to the index finger on the nondominant hand and then articulates the rest of the sentence. Another example moves the index finger (of the dominant hand) in an arc along the fingertips of the pinky and ring fingers (on the nondominant hand) and then upon reaching the middle finger, moves away. This use would mean that I went through preparatory and freshman years and then left during the sophomore year.

(63)

thumb	-->	senior year
index finger	-->	junior year
middle finger	-->	sophomore year
ring finger	-->	freshman year
pinky finger	-->	preparatory year

On the surface, all of the four ways to express temporal relations appear different. In (55), movement along the time line signifies movement from the past to the future, and the point at the body is taken to correspond to utterance time. In (57), the body no longer plays a role, but the same metaphor of the time line is used. In (59), another culture-specific construct - the calendar page - is used as a metaphor to show temporal relations.

The metaphor is still of the Moving Ego kind: the calendar page is static, and events move along this page. In (61), the movement is similarly based on the metaphor of a calendar page but is manifested on the non-dominant hand rather than in signing space.

Otherwise, all four means of establishing reference time are similar in how they are used to portray temporal relations. They are all based on the Moving Ego metaphor, which takes time to be constant and the world to move against this constant. They all set up reference times in the temporal schema. The temporal schema does not correspond to the way the metaphor is manifested in signing space or on the non-dominant hand. For instance, the time line in (55) cannot be used to show relationships between reference time, situation time and utterance time. Suppose the signer sets reference time by signing TUESDAY close to the body. Then the signer signs a verb constellation farther away from the body to indicate that event time is after reference time. This use is impossible. Rather, the time line is only used to show relationships between two or more reference times in signing space. At least one of the reference times must be defined through a temporal adverb. In Emmorey's example, the signer signs POSTPONE in such a way that the hands move from the location associated with TUESDAY to a location farther out on the time line which is associated with FRIDAY. Both locations are interpreted as reference times. Thus the meaning is that a test has been postponed from Tuesday (= first reference time) to Friday (= second reference time). It does not mean that Tuesday (= reference time) is followed by a test on Friday (= event time). The time line then contributes to temporal interpretation by providing a spatial representation of reference times, at least one of which is fixed by a temporal adverb.

Since the different ways of showing temporal relations are fundamentally the same in that they use the same Moving Ego metaphor and only fix reference time, it is not necessary to distinguish them with different labels, as Engberg-Pedersen (1993) and Emmorey (2001) have suggested for Danish Sign Language and ASL respectively. They have labelled the first way as a 'deictic time line'; the second way as an 'anaphoric time line'; and the third way as a 'sequence time line' or 'calendar space'.

This section has shown that ASL is able to manifest the metaphor of a 'time line' using the signing space or the non-dominant hand and to take advantage of this overt manifestation to show reference times. The overt manifestation of reference times allows the signer to refer back to them anaphorically during discourse. Thus the use of 'time lines' falls under the anaphoric pattern of temporal interpretation, even though it is specific to the visual-manual modality. Since the overt manifestation itself is static, the time lines only use the metaphor in which time is static and the world moves with respect to it.

5.4 Narrative pattern of temporal interpretation

This section turns to the last pattern of temporal interpretation, namely the continuity (or narrative) pattern. Under this pattern, the situations are related to each other, and reference time is shifted for each situation. Bounded events or adverbs advance reference time, while states and unbounded events remain at the most recently shifted reference time. This pattern is formalized through the Narrative Dynamism Principle, which is repeated below (Smith 2004).

(64) Narrative Dynamism Principle

i. Bounded event clauses advance narrative time

ii. States and unbounded events do not advance narrative time

iii. If e is a bounded event, R of current sentence is after R of immediately preceding sentence.

As in English and Mandarin Chinese, the narrative pattern of temporal interpretation is common in the narrative discourse mode in ASL. The section illustrates the narrative pattern with three fragments of ASL texts in the narrative discourse mode. Then, it discusses a set of "simultaneous constructions" which are prominent in ASL. Because they are concerned with the sequentiality vs. simultaneity of events, they are discussed under the narrative pattern of temporal interpretation.

The first example of a narrative text comes from Baker-Shenk and Cokely (1980) and is presented in (65). The signer explains the procedure of baking a pie and narrates several events in turn. She opens with PAST-NIGHT 'last night' which fixes the initial reference time. The next sentence indicates what the signer did overall: make a pie. The rest of the sentences then go into this event in greater detail. Each of the sentences describe bounded events; thus reference time is advanced with each sentence, as illustrated in the temporal schema in (66). Note that the events are understood as being ordered one after another. They cannot receive an 'unordered list' reading that is available for the sentence in (53).

(65) Context: Someone asks the signer, a novice cook, what she did last night. The signer replies by giving a step-by-step account.

t t gaze: right
PAST-NIGHT MAKE P-I-E, FIRST EGG-right, MILK-right

gaze: right, mm
VARIOUS-THINGS-right, (2h)alt.DROP-things-IN-right FINISH,

gaze: left, t gaze: left nod+br
O-V-E-N-left TURN-ON-OVEN, WAIT+regularly, TIME*

gaze: left gaze: right to left
"OPEN-DOOR-HOLD PUT-PIE-IN-OVEN CLOSE-OVEN-DOOR

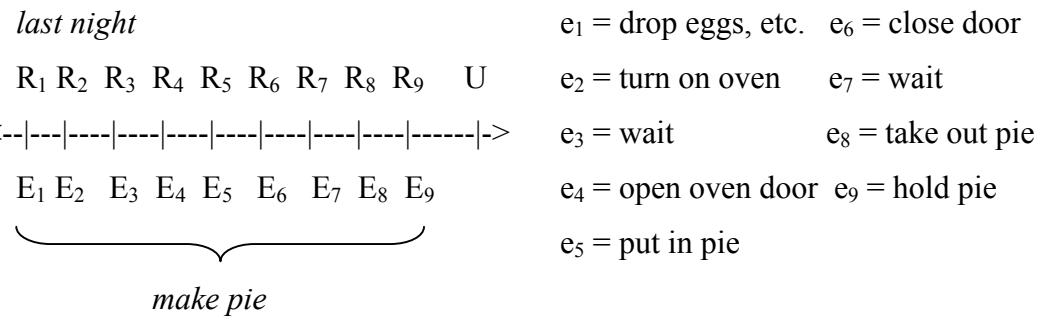
nod+br gaze: left
WAIT+regularly FINISH*, OPEN-DOOR-HOLD

gaze: left, 'look satisfied'
TAKE-PIE-OUT-HOLD

‘Last night, I made a pie. First, the eggs, milk, and other things, I dropped them into (the container) and finished (that part of the process). Then the oven, I turned it on and waited for a while. When it was the right time, I opened the oven door, put in the pie, and then closed the oven door. I waited a while until it was done, then opened the oven door, took the pie out, and proudly held it.’

(Baker-Shenk and Cokely 1980: 292)

(66) Temporal schema for sentence in (65)



The second example, presented in (67), is similar to an example presented under the anaphoric pattern, repeated as (68). In (68), there is no instance of FINISH, and the verbs RUN, WALK and REST are atelic and thus represent unbounded events. Under an anaphoric pattern, they could be interpreted as occurring in any order, as long as they occur at the time of yesterday. On the other hand, in (67), FINISH is present and bounds each event. Thus under the narrative pattern, it is clear that reference time has been shifted with each bounded event, and there is only one possible temporal order for the events, namely, the order in which they have been narrated. YESTERDAY fixes the first reference time; then events follow in sequence from this point. The last sentence is a state and occurs at the last reference time. This pattern of interpretation is shown in the temporal schema in (69).

_____t _____rhq

(67) YESTERDAY JOHN$_i$ DO++

pro$_i$ RUN (FINISH). pro$_i$ WALK (FINISH). pro$_i$ REST. NICE DAY.

'Yesterday, John ran, and then walked, and then rested. It was a nice day.'

_____t _____rhq

(68) YESTERDAY JOHN$_i$ DO++

pro$_i$ RUN. pro$_i$ WALK. pro$_i$ REST. NICE DAY

'Yesterday, what John did was running, walking, and resting. It was a nice day.'

(69) Temporal schema for description in (62)

yesterday E_1 = running

R_1, E_1 R_2, E_2 R_3, E_3 U E_2 = walking

<-------|----------|----------|----------|--> E_3 = resting

S_1 S_4 = nice day

Another example of narrative interpretation follows in (70). There is a locating adverbial at the beginning of discourse (LAST-WEEK), which fixes the original reference time (R) for the event of flying to Sweden. The next event, arriving in Sweden, is a bounded event and also advances reference time. TOMORROW then shifts this reference time. That is, the swimming event is understood to occur one day after the second reference time, not one day after utterance time. This is schematized in the temporal schema in (71).

_____t

(70) a. LAST-WEEK *pro* FLY-TO SWEDEN, *pro* ARRIVE,

_____t

TOMORROW *pro* SWIM

'Last week, I flew to Sweden. Then, the day after I arrived, I swam.'

(71) Temporal schema for the sentence in (70)

last week *+1 day*

R_1, E_1 R_2, E_2 R_3, E_3 U

<----|---------|---------|---------|-----> E_1 = fly to Sweden

E_2 = arrive

E_3 = swim

5.4.1 Simultaneous constructions

This section examines further examples of discourse chunks that are common in ASL. They are called 'simultaneous constructions', and the section considers how temporal interpretation is achieved in these chunks. Emmorey (2001: 147) defines a 'simultaneous construction' as the use of the two arm/hands to "simultaneously produce distinct signs . . . related to a single predication." As she notes, one hand usually stays in place, while the other hand articulates the second sign. I analyze them as discourse chunks in which the reference time of one event overlaps with the reference time of another event. How one event overlaps with another depends on the particular construction. There are several types of constructions that fall under the rubric of 'simultaneous construction.' Here I focus on four, since each one illustrates a different temporal schema.

The first kind of simultaneous construction is presented below. In this example, the signer first articulates DRIVE, which uses both hands. Then the nondominant hand stays in place, while the dominant hand articulates DRINK. Then both hands are used for signing DRIVE again. In the notation below, DH stands for dominant hand, and ND for nondominant hand. A series of 'x' symbols on the nondominant hand tier shows that the sign uses both hands. A series of dashes indicates that the hand configuration of the nondominant hand in the previous sign is held throughout the articulation of a sign on the dominant hand.

(72) a. DH: DRIVE DRINK DRIVE

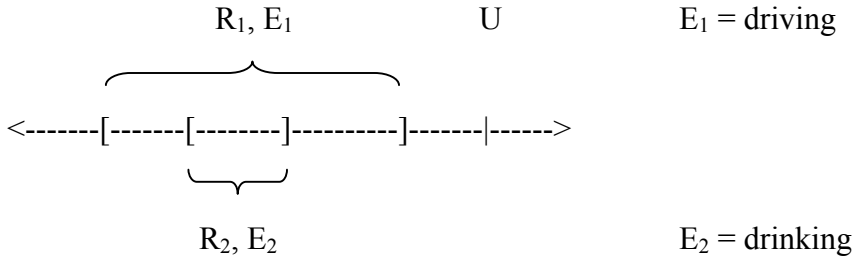
ND: xxxxxx ---------- xxxxxx

'While I was driving, I drank (coffee).'

Figure 25. DRIVE DRINK DRIVE

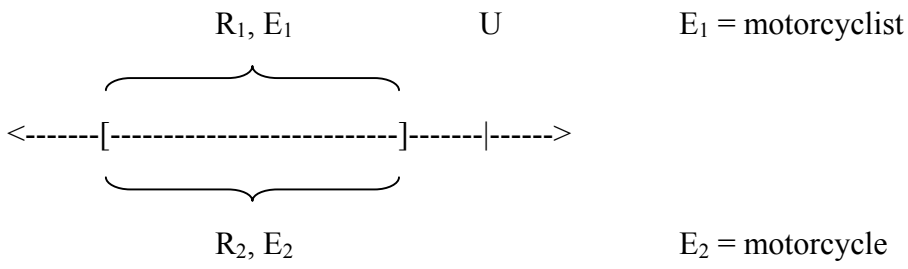
The meaning of the construction is that the reference time for the drinking event is contained inside the reference time for the driving event, as illustrated in the temporal schema below. The length of the reference time for the drinking event is unspecified, but it is unambiguously situated within the reference time for the driving event. There is both an anaphoric and continuity pattern of temporal interpretation. The first event establishes an initial reference time. The second event refers back to the initial reference time but starts after it. In contrast, the English sentence *While I was driving, I drank coffee* leaves open the question of when the event of drinking occurs during the event of driving, e.g. drinking could occur near the beginning of driving, or in the middle, or towards the end.

(73) Temporal schema for DRIVE - DRINK - DRIVE



The next type of construction has not previously been labeled as a 'simultaneous construction'. This construction is called 'body partitioning' by Dudis (2004). His example tells about a motorcyclist going up a hill. In this construction, the body is split into different partitions, the face and the hands. Each partition represents a different event. The face shows the strained facial expressions of the motorcyclist, as if there is effort in going uphill. The face represents the event of the motorcyclist riding the motorcycle. At the same time, the hands represent the event of the motorcycle going up the hill and show how the motorcycle moves. Each event has its own reference time. The fact that the face produces the facial expression at the same time as the articulation of the hands signals that the two reference times are co-terminous, as indicated in the following temporal schema.

(74) Temporal schema for body partitioning



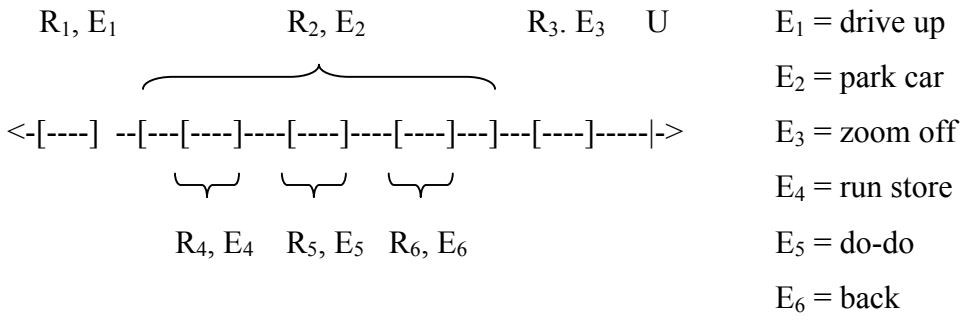
As with the first type of construction, both an anaphoric and continuity pattern of temporal interpretation appear: the two reference times refer to each other and the events progress together time. The English sentence *I strained while I was riding the motorcycle up the hill* has somewhat a similar meaning.

For the third type of simultaneous construction, an example is taken from Emmorey (2001: 148) and glossed in (75). In this example, the sign PARK is specially made with the non-dominant hand. After the articulation of the sign, the non-dominant retains its handshape configuration, while the dominant hand articulates the rest of the

signs in the discourse chunk. The non-dominant hand "holds" the sign PARK in place and serves as an temporal anchor for the rest of the chunk. It introduces an initial reference time, and the "hold" serves as a reminder that the reference times for all of the following events are within this reference time. This is illustrated in the temporal schema in (76). There is narrative advancement of reference time within the series of events while the car is parked, and the whole series of reference times refer anaphorically to the initial reference time. Thus anaphoric and continuity patterns of temporal interpretation are overlaid. The corresponding example in English receives a similar interpretation: the sentence *I parked the car, went into the store, did errands, and came back* is also understood to mean the events of going into the store, doing errands and returning to the car occur one after another and this whole series occurs while the car is parked.

(75) PARK, RUN STORE, DO-DO FINISH, B-A-C-K, ZOOM-OFF
'[My friend has a fancy car, a Porsche.] (She) drives up and parks. (She) enters a store, does errands, and when finished, (she) gets back in her car and zooms off.'

(76) Temporal schema for third type of simultaneous construction

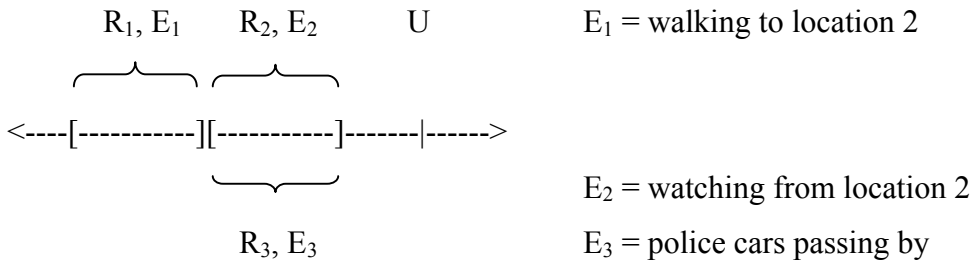


Yet another type of simultaneous construction combines aspects of the previous two simultaneous constructions. The example for this type is from Liddell (2003: 305) and glossed in (77). The sentence first describes an event of walking. Then just as this event of walking is terminated, two events are described simultaneously: the event of

watching from the location where the walking stopped, and the event of police cars passing by. It is similar to the third type of simultaneous construction in that there is a narrative sequence of two chunks: first the walking event, and then the watching event which co-occurs with the cars flying by. Each chunk has a different reference time, and one reference time follows another. The chunks are linked by the pro-form for the signer which appears in the first chunk and stays through the second chunk. The construction is similar to the second type in that it involves body partitioning in the second chunk: the body is split into a) the face and the nondominant hand, and b) the dominant hand. The face and nondominant hand narrate the event of the signer watching in surprise, as indicated by a specific facial expression, while the dominant hand conveys the event of the cars passing by. The temporal structure of this construction is presented in (78).

(77) a. PRO-1 BIPED-WALK-TO(location 1 to location 2) POLICE VEHICLE-PASS-BY+habitual(at location 2)
'I was walking along and came to a point when many police cars were passing by.'

(78) Temporal schema for body partitioning



Simultaneous constructions then involve relating one reference time to another and invoke both anaphoric and narrative patterns of temporal interpretation. While the constructions exploit the sign language-specific property of having two articulators (the

hand/arms) available, the constructions are subject to a constraint: if there are (animate) participants in the events, the events must share at least one participant in common.

Thus, in the first type of construction, the agent is the same in both events. In the second type of construction, the first event has an agent (the motorcyclist), but the second event only has a theme (the motorcycle), so the constraint does not apply. In the third type, the same is true: the event of the car being parked has only a theme. On the other hand, the series of sub-events that occur while the car is parked share the same agent and satisfy the constraint.

The constraint also allows simultaneous constructions in ASL where the agent in one event is the theme in the other event, as in 'While I was driving, I was constantly tapped on the shoulder by my friend.' Finally, it explains why simultaneous constructions cannot be used to express sentences like 'While I was cooking, my friend read the newspapers', since the two events do not share any participants in common. Rather, the ASL signer must sign each clause sequentially, one after another, as in English.

Overall, this section has shown that simultaneous constructions are one modality-specific resource for showing temporal relationships between situations. The temporal interpretation of simultaneous constructions remains is consistent with both Static and Narrative Principle. Multiple situations (which may or may not overlap with each other partially or completely) can be anchored to a single reference time under the Static Principle. Alternatively, a series of events under a macro-reference time can be ordered consecutively according to their respective sub-reference times. Such an interpretation comes from the Narrative Principle.

5.5 Perspective shift

Often discourse chunks involve multiple characters. It is possible in ASL to adopt the perspective of these characters through a mechanism called role shift or perspective shift. Role shift is signaled by adjusting the eyes, the head, and/or the body slightly to the side in signing space, which shows that the signer is taking on the perspective of whoever is associated with that location (Padden 1986, Engberg-Pedersen 1995, Lillo-Martin

1995). Perspective shift, a term used by Janzen (2004), covers a similar phenomenon which also includes 'constructed action' as discussed by Liddell (1998), Liddell and Metzger (1998) and Liddell (2003). The difference between role shift and perspective shift is that there is no perceptible shift of the body to the side in perspective shift. The body stays in place, and the signer shifts between perspectives of different characters throughout a story. The perspectives can be signaled through eye gaze, facial expressions, and the orientation of the fingertips in some verbs. Since I take role shift to be a subcase of perspective shift, I adopt the latter term here.

Perspective shift by itself does not contribute temporal information, but interacts with discourse mode, which in turn affects temporal interpretation. Specifically, if perspective shift is used to convey two characters' perspective on the same thing, it is considered to be in Description mode. Within this mode, the pattern of temporal interpretation is anaphoric. The reference time for the two perspectives is the same and is linked back to a reference time set up at the beginning of a discourse chunk. An example from Janzen (2004) illustrates. In his notation, RH stands for 'right hand' and LH for left hand. His PRO (for 'pronoun') has been changed to IX here, and '2' stands for 'addressee'. CL indicates a classifier construction.

(79) Eye gaze 2---------left------------------------------2------left
Facial gesture
RH IX1st.sg (LOOK?) gesture MOM WINDOW gesture
'what' 'looking out window
LH LOOK

'We noticed something (down the road). Mom was leaning out the window, looking (down the road).'

Eye gaze 2------left---2-------left-------2----------down

Facial gesture _____t _____t _____t

RH SEE CL:O(strobe) LOOK CL:O(dust) WITH ONE CL:3(vehicle)

Eye gaze ---2----------

Facial gesture

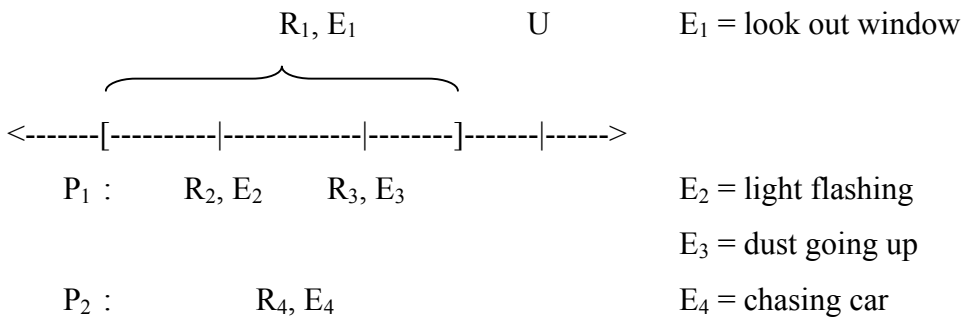
RH CL:5 POLICE CL:5

'(Way down the road) we saw police lights flashing, then a cloud of dust getting bigger, and then a whole row of police cars fanned out with one vehicle out in front of them coming toward us.'

This example involves two perspectives, one by the mother and the other by the police. The mother is sitting in her car on a highway, looking out the window. In the opposite direction are police chasing a car. The above text starts with the mother's perspective and then switches to the police's perspective, as indicated by eye gaze, facial expressions, and the fingertips' orientation in the classifier constructions.

This text invokes both Description and Narrative. It starts with Description mode by setting up the situation (the mother looking out the window). Then the rest of the discourse chunk expands on this situation by going into detail each character's perspective on it. Thus the reference time in each perspective is linked to the original reference time. Under a particular perspective which zooms in on the original reference time and shifts it to utterance time, it is possible to narrate sub-events that progress from one to another, as in Narrative mode. In the temporal schema for (79), P_1 stands for the perspective of the mother, and P_2 for the perspective of the police.

(80) Temporal schema for (79)



What this example shows is possible to switch among all three ways of temporal interpretation within the same discourse chunk. For instance, one establishes a reference time at the outset, after which the temporal location of all the subsequent material is anaphorically linked to the reference time. Then perspective shift occurs, thus shifting reference time to utterance time. Then starting from this utterance time, it is possible to carry out narrative advancement by relating a series of events in order.

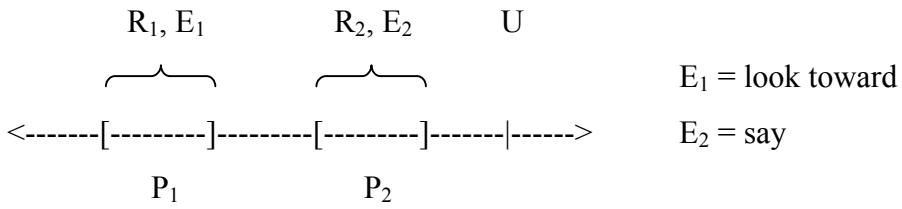
Relating a series of sub-events in Narrative mode is not a necessary feature of perspective shift. Perspective shift can be used to report dialogue between characters, as in the following example from Liddell (2003: 161). (The glosses have been modified from the original version to conform to the notational conventions adopted here.)

(81) IX_a $_a$LOOK-TOWARD$_b$ (from perspective of IX_a) "HURRY"
IX_b SAY (from perspective of IX_b): "CALM-DOWN"
"The older sister looked toward the younger sisters and said, 'Hurry!' The younger sisters said, 'Calm down!'"

In re-constructing a dialogue through perspective shift, there is no narrative advancement under a particular perspective. However, narrative advancement still occurs every time a turn is taken during the dialogue, since each reported utterance represents an

event. Below, P_1 stands for the perspective of the older sister, and P_2 for the perspective of the younger sisters.

(82) Temporal schema for (81)



Overall, perspective shift allows rich possibilities for temporal interpretation, depending on which mode (and its accompanying pattern of temporal interpretation) is being used. The above examples of perspective shift show that it is possible to switch between modes within the same text. Determining the temporal location of an event then crucially depends on the particular mode adopted at the moment.

5.6 Summary

In returning to the original question of how temporal interpretation is achieved in ASL, this chapter has shown that ASL has rich resources for determining temporal location. First, under the deictic pattern of temporal interpretation, unbounded events and states are interpreted at utterance time, and bounded events before utterance time. It is possible to use a future modal or a temporal adverb to specify reference times and by virtue of their meaning locate the reference times with respect to utterance time, as long as they do not violate the Bounded Event Constraint. They occur within a deictic pattern of temporal interpretation.

There are also two other patterns of temporal interpretation: anaphoric and narrative. Anaphoric interpretation links the temporal location of unbounded events and states to a single reference time, and narrative interpretation relates situations to each other. Each successive bounded event advances reference time. It is also possible to

interweave the different patterns of interpretation within a text, which shows that temporal interpretation is quite complex.

ASL then has the same potential for temporal complexity as other languages, tensed and tenseless. Under all three patterns of temporal interpretation, the aspectual system of ASL plays a crucial role. The temporal schema of a sentence, based on its situation type and viewpoint aspect, along with any additional temporal information, correctly predicts the temporal interpretation of the sentence. This in turn provides strong support for the analysis of situation type and viewpoint aspect in Chapters 3 and 4.

Chapter 6: Conclusion and Further Considerations

At the outset of the dissertation, several questions were raised regarding event structure in ASL. What morphemes exist in ASL to mark aspectual distinctions? Which situation types are manifested in ASL, and how are they manifested? Which viewpoints are marked in ASL, and how are they marked? What role do situation type and viewpoint aspect play in temporal interpretation, given that ASL is tenseless? This chapter goes back to these questions by tying all of the previous chapters into an overall picture of event structure in ASL. Then, the chapter considers whether the resulting picture is specific to ASL, or whether it applies to other signed languages. After a brief review of the literature on other signed languages, the chapter closes with cross-modal implications directions for future research into the event structure of signed languages.

6.1 Summary of dissertation

In summarizing the dissertation, this section aims to make conclusions about the aspectual system, and more broadly, the event structure of ASL.

6.1.1 Aspectual morphemes in ASL

ASL exhibits six morphemes for encoding aspectual information: continuative, iterative, habitual, hold, conative and FINISH. All of the morphemes, except FINISH, are bound and involve a modulation of the movement parameter of the verb root. FINISH is a free morpheme, or rather a particle, since its distribution is restricted to two positions, pre-verbal and clause-final.

The first four morphemes relate to situation type, while the latter two relate to viewpoint. In short, the continuative morpheme contributes the temporal feature of duration and functions to extend the temporal interval of an event. The iterative morpheme also contributes the feature of duration, albeit indirectly: it does so by generating repetitions of the event which necessarily require an interval to take place

over. The habitual morpheme is closely related to the iterative morpheme in that it generalizes over the repetitions of the events so that they become a pattern, or a state. The hold morpheme contributes the feature of telicity by providing a final endpoint to an event. The conative morpheme is a special imperfective viewpoint morpheme which focuses on the stages preliminary to an event. FINISH is a perfective viewpoint morpheme which focuses on the event in its entirety.

6.1.2 Situation types in ASL

All of the situation types that have been attested in other languages are also seen in ASL: states, activities, semelfactives, achievements and accomplishments. They differ with respect to three temporal features that compose them: dynamism, duration and telicity.

Each situation type has linguistic correlates in ASL. States refer to unchanged situations and can be diagnosed through incompatibility with imperatives, verbs of perception and elements modifying duration. Activities denote ongoing events that have internal stages and are seen through compatibility with imperatives, duration-modifying elements and the particle STILL. They are incompatible with NEED or completive adverbials. Semelfactives are instantaneous situations without an endpoint and are identified by compatibility with imperatives, incompatibility with modifiers of duration, and incompatibility with NEED. Achievement verbs are also instantaneous but have a natural endpoint, and they are compatible with imperatives and NEED, but not with modifiers of duration nor STILL. Finally, Accomplishments describe processes that have an endpoint. They are recognized by their compatibility with imperatives, modifiers of duration, the verb NEED, and completive adverbs. In addition, they are ambiguous when combined with ALMOST and are not compatible with STILL.

6.1.3 Viewpoint in ASL

All three viewpoints – perfective, imperfective, and neutral – are attested in ASL. Perfective viewpoint is encoded by clause-final FINISH. This viewpoint is distinct from

the past, which is not overtly marked but implied through certain pragmatic defaults, and from the perfect, which is marked by pre-verbal FINISH. Sentences with pre-verbal FINISH may have perfective viewpoint but do not have to. There is no morpheme in ASL that encodes general imperfective viewpoint. However, there is a morpheme, the conative, which encodes a special case of imperfective viewpoint: as indicated above, it focuses the stages prior to an event. Both FINISH and the conative morpheme are optional. Thus it is possible for a sentence not to have FINISH or the conative morpheme. In such cases, the sentence is zero-marked and receives neutral viewpoint. This means that the sentence allows either perfective or imperfective viewpoint. Thus sentences in ASL will always have a viewpoint, which is either perfective, imperfective or neutral.

6.1.4 Temporal interpretation in ASL

Situation type and viewpoint point play an important role in temporal interpretation in ASL. There are three patterns of temporal interpretation. Under the deictic pattern, which is the default one, there are pragmatic constraints on the temporal interpretation of a sentence: sentences describing states and unbounded events are interpreted in the present, while sentences describing bounded events are interpreted in the past. It is possible to override these pragmatic defaults with the future modal WILL or with temporal adverbs that specify reference time, as long as the Bounded Event Constraint is obeyed, which says that bounded events cannot take place in the present.

There are two other patterns of temporal interpretation. Under the anaphoric pattern, the temporal location of unbounded events and states is linked to a single reference time that has been earlier specified, usually through a temporal adverb. Under the narrative pattern, the reference times for bounded events are linked successively in time, as if on a chain.

6.1.5 Conclusions

While ASL does not have a rich tense system, it presents a rich and complex aspectual system that plays a role even in temporal interpretation. Every sentence has a

temporal schema that is associated with a particular situation type and a viewpoint. Moreover, ASL exhibits several morphemes that affect either the situation type or the viewpoint of a sentence. In the absence of these morphemes or overt temporal adverbs or other similar elements, the temporal schema of a sentence determines its temporal interpretation based on a number of pragmatic defaults.

2. Cross-linguistic comparisons

It has been demonstrated in Chapters 2, 3 and 4 that there is cross-linguistic variation across spoken languages with respect to their aspectual systems. For example, they vary with respect to the aspectual distinctions that are marked. Languages also vary with respect to linguistic correlates for situation type. It is natural to ask whether there is variation across signed languages with respect to their aspectual systems. Are the properties of the aspectual system outlined above unique to ASL, or do they appear in other signed languages?

There is some literature on aspect in other signed languages than ASL which is briefly surveyed in this section. For ease of discussion, the survey is organized along similar lines as the dissertation. Thus, the survey reviews what has been reported about the following in other signed languages: aspectual morphemes, situation types, viewpoint aspect, and temporal interpretation. Following the survey, the section reaches some cross-linguistic generalizations about the aspectual system of a signed language.

6.2.1 Morphemes

This subsection reviews aspectual morphemes in other signed languages. ASL has exhibited two kinds of aspectual morphemes, “simultaneous morphemes” and a particle. Simultaneous morphemes involve a stem-internal change, altering a sublexical property of the sign, specifically movement, while particles are free morphemes that appear separately from the verb. The subsection reviews simultaneous morphemes and particles in other signed languages.

6.2.1.1 Simultaneous morphemes

Five of the aspectual morphemes in ASL are simultaneous: continuative, iterative, habitual, hold and conative. There are analogues to each of these morphemes in at least one other signed language. In addition, one signed language exhibits a simultaneous morpheme for completive aspect.

Analogues to 'continuative'. Swedish Sign Language (SSL), British Sign Language (BSL), the Sign Language of the Netherlands (NGT) and Spanish Sign Language (LSE) have modulations that look similar in form and meaning to the continuative morpheme in ASL. According to Bergman and Dahl (1999), SSL uses slow reduplication to indicate an "ongoing, prolonged action." The form is described as involving large and almost circular, uneven movement. They give two examples, WAIT### 'wait for a long time' and WRITE### 'write much.' Sutton-Spence and Woll (1999) note that some verbs in BSL like WAIT and WALK can be modified to show how long the action lasted. If the sign WAIT is signed slower, it means to 'wait even longer.' Some signs have no path movement, like LOOK and HOLD; in these cases, the signs are held longer than normal. Likewise, Hoiting and Slobin (2001: 127) observe a form marking continuative aspect in NGT. This form involves "three repetitions of an elliptical modulation accompanied by pursed lips and a slight blowing gesture". When applied to the verb 'work', it means 'he's going on working (at the moment).' Similarly, Cabeza and Fernandez (2004: 78) mention that in LSE, slow movement conveys "durative aspect".

Analogues to 'iterative'. A number of signed languages have forms that look similar to the iterative morpheme in ASL: SSL, BSL, Indo-Pakistani Sign Language (IPSL) and Nicaraguan Sign Language (ISN). Bergman and Dahl (1994) mention that SSL uses fast reduplication, in which movement is smooth and short, to show repeated action. Thus WAIT+++ means 'be waiting, waiting for a while' and WRITE+++ means 'be writing, write for a while.' In BSL, slow repetition means that one does something again and again (Sutton-Spence and Woll 1999). Likewise, in IPSL, "repeating the signs, [w]here every repetition is executed at the same place" means to 'happen repeatedly' or

'do something repeatedly' (Zeshan 2000: 67). Examples of verbs in IPSL that take this form are LENA: 'take' and DENA: 'give'. Senghas (1995: 96) notes that Nicaraguan Sign Language (ISN) often incorporates "aspect" into the movement of the verb. For example, "the inflection for repetition or iteration was often included within the sign FALL to give it a meaning somewhat like 'tumble' or 'fall head-over-heels repeatedly" (Senghas 1995: 72).

Analogues to 'habitual'. For three signed languages (NGT, BSL and LSE), researchers describe a form that comes close to the habitual morpheme in ASL. Hoiting and Slobin (2001: 127) indicate that NGT has "habitual aspect" which involves "slower elliptical modulation accompanied by gaze aversion, lax lips with protruding tongue, and slowly circling head movement." When applied to a verb like WORK, the resulting meaning is "He always works on and on." For BSL, Sutton-Spence and Woll (1999) say that fast repetition in some verbs (e.g. KNOCK, GO) in some cases means that the action is always performed. Cabeza and Fernandez (2004: 76) also mention that LSE uses repetitiveness to indicate habitualness. One question about these forms is whether they are distinct from iterative forms.

Analogues to 'hold'. One signed language, BSL, has a form that involves a sudden hold at the end of the sign and is labelled "cessive inflection" (Sutton-Spence and Woll 1999). The form is similar to the hold morpheme in ASL.

Analogues to 'conative'. Two signed languages have a form that is comparable to the conative morpheme in ASL: BSL and IPSL. Sutton-Spence and Woll (1999) describe a form in BSL that involves an initial hold of the sign. The sign may end with this initial hold, in which case the meaning is that the event is about to happen but does not. Alternatively, the may continue after the hold, if the interruption is only temporary. They provide the following examples: 'I was about to cross the road when a car came rushing past' and 'I was about to eat my dinner when the doorbell flashed'. Zeshan (2000: 71) describes a similar form in IPSL that she calls 'unrealized aspect'. The form consists of 'reducing' the movement of the sign, and the meaning is 'to be about to do something.'

Examples of verbs in IPSL that show this form are KA:TNA: ‘was just going to cut (it)’ and CALNA: ‘was about to walk’.

A simultaneous morpheme for completive aspect. Zeshan (2003: 49) claims that Turkish Sign Language (TID) has a simultaneous morpheme for completive aspect. While TID has a separate particle for completive aspect (as seen in the next section), TID can express the same meaning through a “single accentuated movement, which may have a longer movement path than its noncompletive counterpart” (p. 51). It may be accompanied by a single pronounced headnod or a forward movement of the torso (cf. FINISH in ASL, which can be accompanied by a head nod). Zeshan raises the possibility that the form marks emphasis (‘I did see it’) rather than completive aspect (‘I have seen it’). Below are two examples from Zeshan (2003: 51).

(1) BAKMAK^DEGÍL BAKMAK^DEGÍL GÖRMEK-son/tam
look^not look^not see-completive
‘(I) couldn’t see it for some time, (but finally) I saw it.’

(2) ÍSVÍÇRE BEN GÍTMEK-son/tam
Switzerland IX1 go-completive
‘(Then) I went to Switzerland.’

6.2.1.2 Particles

ASL uses a particle to express perfective viewpoint, FINISH. The survey reveals that many sign languages use a particle to express perfective viewpoint, the perfect construction, completive aspect or a related meaning. In addition, some sign languages use particles to express meanings related to situation type.

Particles related to perfective/perfect/completive. The following is a list of all the particles that have been reported in other signed languages and that fall under this rubric. They receive further discussion in section 6.2.3, which looks at viewpoint more generally. SSL has a particle glossed as HAP, which is “used to relate an event to a later

point of reference – typically the point of speech for which the event is seen as somehow relevant" (Bergman and Dahl 1994: 401). BSL has two separate lexical markers, FINISH and BEEN, which show "completion" (Sutton-Spence and Woll 1999: 121). Israeli Sign Language (ISL) has an aspectual marker denoting a perfect construction, ALREADY (Meir 1999). IPSL has a sign glossed as HO-GAYA, which is marks completive aspect (Zeshan 2000: 62). Then LSE has the signs READY, END and TURN, the first two of which express a finished action (Cabeza and Fernandez 2004: 69-70). DGS has FERTIG, and GEWESEN (Pfau and Steinbach 2004, Rathmann 2005). Finally, TID has three signs which are close in meaning: TAMAM 'done, complete, ready'; BITTI 'finish(ed)'; and OLMAK 'be, become' which has a related, resultative function ('have become') (Zeshan 2003: 50).

Particles related to situation type. In addition, some signed languages use particles to express one of the temporal features of situation type. For IPSL, Zeshan (2000: 68) notes that if a verb is already lexically specified for repetition, it does not take the iterative form which itself involves repetition. Instead, the sign BA:R_BA:R 'again' is used along with the verb. NGT has a particle glossed as DOOR (Dutch for 'through'), which is an auxiliary-like element that carries continuative or habitual aspect in case the verb cannot take the aspectual form due to phonological reasons (Hoiting and Slobin 2001: 127). For example, the NGT verb WORK has inherent movement and the verb TRY involves contact between the hands and the body; both kinds of movement prevent the application of the aspectual form. I propose elsewhere that German Sign Language (DGS) has a particle, DURCH, that is used to express continuative aspect (Rathmann 2005). The particle is similar in form to the NGT sign DOOR. While DGS has a continuative morpheme that appears simultaneously with the verb (as well as iterative and habitual morphemes), the language has the additional option of expressing continuative aspect through the particle. The particle can be used even if combining the simultaneous morpheme for continuative aspect with the verb does not violate any phonological constraint. One question for future study is whether the particles

BA:R_BA:R in IPSL and DOOR in NGT can be used if there is no phonological violation upon combining the simultaneous morpheme with the verb.

6.2.2 Situation type

Two studies of aspect in other signed languages explicitly discuss situation type. In one study, Tang (2004) examines telicity in Hong Kong Sign Language (HKSL). Tang observes that telicity in HKSL is associated with the movement component of the sign, with the spatial locus assigned to the grammatical object, and with the overt argument as represented by the handshape component of the classifier constructions. For example, spatial verbs that denote an activity will select a random path movement which does not end up at a specific locus.

In the second study, Sutton-Spence and Woll (1999: 122) identify two "verb classes" in BSL: stative and dynamic. Stative verbs "describe states or processes that have no obvious action". Examples include BE, HAVE and KNOW. They note that these verbs do not "indicate aspect." One question is whether these verbs can take an aspectual morpheme like the continuative. Stative verbs do not have differentiated internal stages that can be subject to modification by the continuative morpheme. Dynamic verbs in BSL "describe something happening." Sutton-Spence and Woll note two further sub-types of the dynamic class: durative and punctual. Durative verbs refer to events that go on for any length of time, like WALK and SWIM (cf. activities) and ANALYZE and READ (cf. accomplishments). Punctual verbs refer to events that either happen at a moment (e.g., KNOCK, BLINK, cf. semelfactives) or mark a transition (e.g., ARRIVE, SCORE-GOAL, cf. achievements). One question about these verb classes is whether they are associated with linguistic correlates, such as the ability to take the continuative morpheme.

6.2.3 Viewpoint

Section 6.2.1.2 lists particles from several signed languages that relate to perfective, perfect and/or completive. This section reviews further properties about these particles.

Bergman and Dahl (1994) have suggested that the particle HAP in SSL is a perfect marker. One clue is that HAP occurs in pre-verbal position, as seen in their examples.

(3) a. Context: I want to give your brother a book to read, but I don't know which. Is there any of these books that he READ already?
THIS ONE BOOK HAP READ
'(Yes,) he READ this book'

b. Context: Did you find your brother at home?
HAP LEAVE
'(No, we did not. He LEAVE (before we arrive).'

c. INDEX-c HAP WALK: 23 MILE ON TWO WEEK
'We walked 230 kilometers in two weeks.'

Another clue is that "typically, PERFECTS are not used in narrative contexts – i.e., about the non-initial members of chains of events narrated in a sequence."

In BSL, there are two particles, FINISH and BEEN. Sutton-Spence and Woll (1999: 121) note that FINISH is used at the end of the clause, while BEEN is used at the beginning or at the end of the clause. They also observe that BEEN cannot be used with EAT+++ 'I was eating'.

DGS exhibits a similar pattern as BSL. DGS has two particles, FERTIG and GEWESEN. Like FINISH in BSL, FERTIG in DGS always appears at the end of the clause, and it induces narrative advancement. In contrast, GEWESEN may appear at the

end of the clause or before the verb. Based on these facts, I suggest that FERTIG is a perfective marker, while GEWESEN is a perfect marker (Rathmann 2005).

In IPSL, there is a particle glossed as HO-GAYA. Zeshan (2000: 63) claims that this particle is a marker of completive aspect. It stands in contrast to the sign PAHLE 'before' which "is used in IPSL to express past tense" and which appears mostly at the beginning of the sentence (p. 64). HO-GAYA may appear in both present and future contexts, and it appears in sentence-final position in most sentences.

In TID, Zeshan (2003) has identified three particles: BÍTTÍ, TAMAM, and OLMAK. She notes that they "are limited to contexts that are compatible with a more literal reading of 'finishing, completing'" (p. 50). The examples given for BÍTTÍ and TAMAM show them to occur in sentence-final position.

(4) BEN Osol ÍSARET TELEVÍZYON Osol 1HABERsag-tekrar BÍTTÍ
IX1 IXleft sign television IXleft 1messageright-iterative finish
'I kept telling them (the deaf) in signs what was happening on TV, that's one thing'

(5) SONRAKÍ HAFTA TAMAM sol.yukariUÇAKon GELMEK TAMAM
next week done left.up-airplanefwd come done
'After a week, (the trip) was over, and I came back home, and that's it.'

The LSE examples provided by Cabeza and Fernandez (2004: 69) show that the particles READY and TURN appear at the end of the sentence. Moreover, the glosses suggest that the particles induce narrative advancement.

(6) PRO.1 PREPARE HOME REMOVE-SCALE READY
CLEAN READY
CL:FISH-PLACE-TRAY
[Extract of the sequence Explain how you prepare the fish]

'I prepare the finish at home; once I remove the scales and clean it, I place it on the tray.'

(7) PRO.1 PAST CHILD EVERY-DAY MORNING[N:repetition] ALWAYS JUICE ORANGE END TURN
CHOCOLATE DUNK-PASTRY
'When I was a child, every morning I had orange juice and hot chocolate with pastries for breakfast.'

Meir (1999) argues that the particle ALREADY in ISL is a perfect marker. Her arguments are three-fold: it is not a past tense marker, since it can appear with past, present and future time adverbials; its core meaning is to relate a resultant state to a prior event; and it occurs more in dialogues than in narrative context. Most of her examples show ALREADY in pre-verbal position. One example, shown in (8), suggests that ALREADY can induce narrative advancement, and another example, presented in (9) shows that it is felicitous to use ALREADY with 'durational aspect'.

(8) ('I went downtown, bought some clothes, came back home...')
ALREADY I SIT I STUDY EXAM (p. 50)
'. . . and immediately sat down to study for the exam.'

(9) I ALREADY STUDY(durational) EXAM.
'I was engaged in studying for a long time, I have finished studying'
(and I'm prepared for the exam).

All of the above facts raise intriguing questions about the particles in various signed languages. For instance, do SSL HAP and ISL ALREADY fit contexts for a perfect marker? Do these languages also express perfective viewpoint, and if so, how? Is IPSL HO-GAYA a candidate for a perfective viewpoint morpheme? BSL, DGS TID and

LSE have multiple particles with different properties. Do the different properties correlate with different semantic contributions? If so, are some of these particles perfect markers, and others perfective viewpoint morphemes?

6.2.4 Temporal interpretation

Some literature on signed languages also discuss how temporal interpretation is achieved, given that other signed languages do not have overt verbal markers for tense, (e.g., BSL, Sutton-Spence and Woll 1999: 115). Instead, they use modals and adverbials to convey temporal location. For instance, in SSL, the sign glossed as FUTURE is "used primarily about events in the future that are somehow planned, intended or seen as obligations" (Bergman and Dahl 1994: 401) and BSL uses WILL and lexical markers like TOMORROW to express the future (Sutton-Spence and Woll: 116). In LSE, present time is not marked by default; rather a sign situating an event in time appears at the beginning of the clause (Cabeza and Fernandez 2004: 68).

In addition to locating adverbs, signed languages use adverbs of frequency, duration, manner and degree. Adverbs can be lexical signs like SSL HABITUAL 'usually' (Bergman and Dahl 1994); LSE ALWAYS (Cabeza and Fernandez 2004: 70); and BSL OFTEN, ALWAYS, FREQUENTLY, NORMALLY, SLOWLY, CONFIDENTLY and CAREFULLY (Sutton-Spence and Woll 1999). Some lexical signs specify duration through numeral incorporation, as seen in ASL (e.g. TWO-DAY), and as reported in LSE (Cabeza and Fernandez 2004: 73).

Adverbs in signed languages can be non-manual. In described in Chapter 3, ASL uses the 'th' mouth formation over the verb phrase to indicate a careless manner and the 'mm' mouth formation to indicate a regular manner. Sutton-Spence and Woll (1999) report that similar oral components are used in BSL for such meanings.

In addition, some adverbs involve changing the movement of the verb to show manner or degree. For instance, in BSL, the speed of the movement can be adjusted to show whether the event occurred quickly or slowly; moreover, the size and strength of the movement can be adjusted to show intensity (Sutton-Spence and Woll 1999). Signed

languages also stagger the movement in steps to show a (gradual) increase or decrease in degree, as documented in LSE (Cabeza and Fernandez 2004: 75), BSL (Sutton-Spence and Woll 1999: 120), and IPSL (Zeshan 2000: 60).

Apart from modals and adverbs, signed languages rely on pragmatic principles to determine temporal interpretation. Sutton-Spence and Woll (1999: 117) write that in BSL, "pragmatics ("common sense") also determines whether an event is in past or not." In their example, if someone has a short, neat haircut and is discussing something related to the barber, the event is pragmatically interpreted in the past. Cabeza and Fernandez (2004: 69) also mention that in LSE, in order to sequence events, they are narrated in the order that they occur in "real" time. This corresponds to the use of the narrative principle, which shifts the reference time for each bounded event.

Beyond these modals/adverbs and pragmatic principles, signed languages draw on two resources that are uniquely available to them: signing space and a second arm/hand. For instance, "timelines", which use signing space, are reported in many sign languages, such as BSL (Sutton-Spence and Woll 1999) and LSE (Cabeza and Fernandez 2004). For instance, in LSE, on the primary time line, the past is behind the signer and the future is in front of the signer (Cabeza and Fernandez 2004: 75). On a secondary time line, the left corresponds to the beginning, and a point to the right serves as a reference time (Cabeza and Fernandez 2004: 77). Otherwise, there is variation in how signing space is used to express temporal relations. For instance, Finnish Sign Language uses a 'clock-like' space to move the hand clockwise for 'postpone from quarter past to half past', and ASL uses a 'calendar-like' space to move the hand downwards for 'every Monday'.

Finally, the second arm/hand can exploited to convey that an event is co-temporaneous with another event, as reported for BSL by Sutton-Spence and Woll (1999: 121). Their examples include 'I read while someone talked', 'I held the baby while I picked up the bag', and 'She gripped the steering wheel as she sounded the horn'.

6.2.5 Cross-linguistic generalizations

The survey of the literature on aspect in various signed languages suggests the following cross-linguistic generalizations. First, signed languages are relatively uniform in their use of simultaneous morphemes, including those related to situation type and one related to a special case of imperfective viewpoint. Second, sign languages appear to be uniform in their use of pragmatic principles to constrain temporal interpretation, and in their use of temporal adverbs or modals to override the principles. In addition, the use of non-manual adverbs, adverbial modification for manner and degree, timelines, and the two arm/hands is common across several signed languages. The third generalization pinpoints the locus of cross-linguistic variation in particles: signed languages use particles (usually grammaticized from a lexical sign) to express as aspectual meaning, but the particles' meanings, functions, and properties are often language-specific.

6.3 Cross-modal implications

The relative uniformity across signed languages with respect to aspect is rooted in the *form* of expression (cf. Wilbur's (2004) "Event Visibility Hypothesis" and form-meaning correspondences). There are four possible reasons behind this relative uniformity.

The first possible reason for the relative uniformity of signed languages with respect to aspect is recreolization (Fischer 1978, Newport and Supalla 2000, Rathmann and Mathur 2002). The demographics of the signing population is similar for each signed language: a small percentage of signers have been exposed to their language from birth by being born to deaf, signing parents; the majority of the signers are born to hearing parents who do not know the signed language, and the signers do not acquire the signed language until later in life, usually from peers at a school for the deaf. The consequence of this demographic distribution is that the language is "re-creolized" with each generation of signers, thereby keeping the state of the language similar to that of a young language. In addition, signed languages are not more than 400 years old and are young compared to spoken languages. According to Aronoff, Meir, Padden and Sandler (2003),

the young-(like) status of sign languages may account for their relative uniformity, since some creolists believe that younger languages are more similar with respect to morphological and syntactic properties. This position remains under debate (cf. McWhorter 1998 and deGraff 2003) and is not yet conclusive.

Another possible reason is that signed languages use signing space to make visible the interface between linguistic structure and spatio-temporal conceptual structure (Rathmann and Mathur 2002, Aronoff, Meir, Padden and Sandler 2003). One part of the temporal and aspectual system of signed languages uses signing space: timelines. Timelines use signing space to make visible reference times. While the use of signing space may explain the uniformity of signed languages with respect to timelines, it does not explain their uniformity with respect to other parts of the aspectual system. For instance, aspectual morphemes, including both simultaneous morphemes and particles, do not use signing space to express their meanings.

A third reason, which I favor, is the use of iconicity. While the use of signing space can be iconic, this is not the only form of iconicity in signed languages. As Bergman and Dahl (1994) note, "it is natural to assume that the gestural-visual character of signed languages favors the development of iconic or quasi-iconic processes like reduplication." Wilbur (2004) and Wilcox (2004) have proposed a similar account for the relative uniformity of signed languages. This may indeed account for the similarity of the simultaneous morphemes across signed languages, which manipulate the movement of the sign in an iconic way. For example, one morpheme extends the movement to indicate an extended event; another repeats the movement to indicate a repeated event; yet another holds the movement to indicate an event that is held in time; and so on. The use of iconicity cannot be the sole reason behind the uniformity of signed languages with respect to aspect, though, because some aspects of the aspectual system of a signed language are not necessarily iconic, such as the use of grammaticized particles to express perfective viewpoint and the use of pragmatic principles to determine temporal interpretation.

There is a fourth reason which I also suggest lies at the root of the uniformity of sign languages with respect to aspect: the manual modality of sign languages. Bellugi and Fischer (1973) found that the rate of production is slower for signed languages than for spoken languages. As suggested by Klima and Bellugi (1979), the slow rate of production may bias more simultaneous structure, hence the use of simultaneous morphemes and the use of the two arm/hands for simultaneous constructions. The slower rate of production may also bias the grammaticization of currently existing lexical signs to express meanings that are not covered by simultaneous structure. Then the slower rate may also bias greater dependence on pragmatic principles to constrain aspectual and temporal interpretation.

Apart from these factors, there is no modality-specific effect on the expression of event structure in signed languages. For instance, no viewpoint morpheme for general imperfectivity is reported for ASL or other signed language. This in itself is not necessarily modality-specific, since many spoken languages also do not exhibit an imperfective viewpoint morpheme. Moreover, there are differences across signed languages with respect to the particles that they use and in the extent to which they use them. The range of meanings that are encoded as part of event structure in signed languages appear in spoken languages and are expected to be universal to aspectual systems across languages.

6.4 Directions for future research

While this dissertation has attempted to provide an in-depth analysis of the aspectual system of one signed language, several major questions remain about the aspectual system of a signed language in general.

While this dissertation has concentrated on the range of meanings that are encoded within the aspectual system of ASL, it has left open the question of how aspect is encoded at the level of syntax. To take one example, FINISH in ASL appears in one of two syntactic positions and has a different meaning depending on its syntactic position. What is the precise label for each syntactic position, and how is each meaning of FINISH

related to its respective syntactic position? There are three possible accounts. On one account, FINISH heads Aspect Phrase and is bound by a generic operator for the perfect reading. When the verb phrase is raised to the specifier of Aspect Phrase, FINISH has wide scope and takes a perfective reading. Another closely related account is inspired by Shaffer's (2004) analysis of the ASL modals CAN and MUST in terms of information ordering and speaker subjectivity. Applying her idea to FINISH, when FINISH appears near the verb, it has scope over the verb phrase, and when it is clause-final, it has scope over the whole clause. Yet another account borrows the copying analysis from Lillo-Martin and Quadros (2004): pre-verbal FINISH appears in Aspect Phrase, and clause-final FINISH is the result of copying it to Focus Phrase and deleting the original copy.

Tense represents another domain of study that deserves further study. Given that there is some variation across signed languages with respect to syntax, it would be curious if all turn out to be untensed. One possibility that needs to be investigated is whether the manual modality of signed languages is responsible for this. Is there any modality-related reason behind the fact that signed languages have rich aspectual systems but not tense systems?

It is possible to address these questions only by extending the in-depth study of aspect in ASL to other signed languages. Specific questions have been raised in section 6.2 about the aspectual systems of other signed languages. For instance, what is the precise semantic contribution of the aspectual morphemes in other signed languages and what are the restrictions on their use? Investigating aspect closely in other signed languages would permit us to sharpen the cross-linguistic generalizations regarding aspect in signed languages, and therefore lead us to a better understanding of aspect from a cross-modal perspective.

References

Aarons, D. (1994). *Aspects of the syntax of American Sign Language*. Ph.D. dissertation, Boston University.

Aarons, D., B. Bahan, J. Kegl and C. Neidle (1992). Clausal structure and a tier for grammatical marking in American Sign Language. *Nordic Journal of Linguistics 15*, 103-142.

Aarons, D., B. Bahan, J. Kegl and C. Neidle. (1995). Lexical tense markers in American Sign Language. In K. Emmorey and J. Reilly (eds.), *Language, gesture and space.* Hillsdale, NJ: Lawrence Erlbaum Associates. 225-253.

Anderson, L. (1982). Universals of aspect and parts of speech: parallels between signed and spoken languages. In P. Hopper (ed.), Tense-aspect: between semantics and pragmatics. Amsterdam: Johns Benjamins. 91-114.

Aronoff, M., I. Meir and W. Sandler. (2005). The paradox of sign language morphology. *Language* 81, 301-344.

Bach, E. (1981). *On time, tense and aspect: an essay in English metaphysics*. In P. Cole (ed.), Radical Pragmatics. New York: Academic Press. 63-81.

Bach, E. (1986). The algebra of events. *Linguistics and Philosophy* 9, 5-16.

Bahan, B. (1996) *Non-manual realization of agreement in American Sign Language*. PhD dissertation, Boston University.

Baker, C. (1976). What's not on the other hand. In S. Mufwene et al. (eds.), Papers from the 12th regional meeting of the Chicago Linguistic Society. Chicago: Chicago Linguistic Society. 24-32.

Baker-Shenk, C. and D. Cokely (1980). *American Sign Language: a teacher's resource text on grammar and culture*. Silver Spring, MD: T.J. Publishers.

Battison, R. (1978) *Lexical borrowing in American Sign Language*. Silver Spring, MD: Linstok Press.

Bellugi, U. and S. Fischer (1972). A comparison of sign language and spoken language: rate and grammatical mechanisms. *Cognition* 1, 173-200.

Bennett, M. and B. Partee (1972). Toward the Logic of Tense and Aspect in English. Distributed by the Indiana University Linguistics Club.

Bergman, B. and O. Dahl (1994). Ideophones in sign languages? The place of reduplication in the tense-aspect system of Swedish Sign Language. In C. Bache, H. Basboll and C-E. Lindberg (eds.), *Tense, aspect and action – empirical and theoretical contributions to language typology*. Berlin: Mouton de Gruyter. 397-422.

Bohnemeyer, J. and M. Swift (2004). Event realization and default aspect. *Linguistics and Philosophy* 27, 263-296.

Braze, D. (2004). Aspectual inflection, verb raising and object fronting in American Sign Language. *Lingua* 114, 29-58.

Bloomfield, L. (1933). *Language*. New York: Holt.

Binnick, R. (1991). *Time and the verb: a guide to tense and aspect*. Oxford: Oxford University Press.
Borer, H. (2005). *Structuring sense*. Oxford: Oxford University Press.
Brentari, D. (1996). Trilled movement: phonetic realization and formal representation. *Lingua* 98, 43-72.
Brentari, D. (1998) *A prosodic model of sign language phonology*. Cambridge, MA: MIT Press.
Bybee, J. and O. Dahl (1989). The creation of tense and aspect systems in the languages of the world. *Studies in Language* 13, 51-103.
Cabeza Pereiro, C. and A. Fernández Soneira (2004). The expression of time in Spanish Sign Language (LSE). *Sign Language and Linguistics* 7, 63-82.
Carlson, G. (1977). Bare plurals and the English kind. *Linguistics & Philosophy* 1, 413–457.
Chen-Pichler, D. (2002). *Word order variation and acquisition in American Sign Language*. Ph.D. dissertation, University of Connecticut.
Cinque, G. (1999). *Adverbs and functional heads: a cross-linguistic perspective*. Oxford: Oxford University Press.
Clark, H. (1973). Space, time, semantics and the child. In T. Moore (ed.), *Cognitive development and the acquisition of language*. New York: Academic Press. 27-63.
Cogen, C. (1977). On three aspects of time expression in American Sign Language. In L. Friedman (ed.), *On the other hand: new perspectives on American Sign Language*. New York: Academic Press. 197-214.
Comrie, B. (1976). *Aspect*. Cambridge: Cambridge University Press.
DeDominicis, A. (2001). The Masa tonal system. Paper presented at the Typology of African Prosodic Systems Workshop (TAPS), Bielefeld University, Germany.
DeGraff, M. (2003). Against creole exceptionalism. *Language* 79, 391-410.
DeSwart, H. (1998). Aspect shift and coercion. *Natural Language and Linguistic Theory* 16. 347-385.
Dowty, D. (1977). Towards a semantic analysis of verb aspect and the English 'imperfective' progressive. *Linguistics and Philosophy* 1, 45-77.
Dowty, D. (1979). *Word meaning and Montague grammar: the semantics of verbs and times in generative semantics and in Montague's PTQ*. Boston: D. Reidel Publishing.
Dowty, D. (1986). The effects of aspectual class on the temporal structure of discourse: semantics or pragmatics? *Linguistics and Philosophy* 9, 37-62.
Dudis, P. (2004). Body partitioning and real-space blends. *Cognitive Linguistics* 15, 223-238.
Emmorey, K. (2001). *Language, cognition and the brain: insights from sign language research*. Hillsdale, NJ: Lawrence Erlbaum Associates.
Enc, M. (1987). Anchoring conditions for tense. *Linguistic Inquiry* 18, 633-657.
Enc, M. (1996). Tense and modality. In S. Lappin (ed.), *The handbook of contemporary semantic theory*. Oxford: Blackwell Publishers. 345-358.
Engberg-Pedersen, E. (1993) *Space in Danish Sign Language*. Hamburg: Signum Verlag.

Engberg-Pedersen, E. (1995). Point of view expressed through shifters. In K. Emmorey and J. Reilly (eds.), *Language, gesture and space*. Hillsdale, NJ: Lawrence Erlbaum Associates. 133-154.
Ernst, T. (2002). *The syntax of adjuncts*. Cambridge: Cambridge University Press.
Fischer, S. (1973). Two processes of reduplication in American Sign Language. *Foundations of Language* 9, 469-480.
Fischer, S. (1975). Influences on word order change in American Sign Language. In C. Li (ed.), *Word order and word order change*. Austin, TX: The University of Texas Press. 1-25.
Fischer, S. and B. Gough (1972). Some unfinished thoughts on FINISH. Ms. La Jolla, CA: Salk Institute. Reprinted in *Sign language and linguistics* 2:1, 1999, 67-77.
Fischer, S. and W. Janis (1990). Verb sandwiches in American Sign Language. In: Prillwitz, S. and T. Vollhaber (eds): *Current trends in European Sign Language Research. Proceedings of the 3rd European Congress on Sign Language Research.* Hamburg: Signum Press. p. 279-293
Fleischman, S. (1983). From pragmatics to grammar: diachronic reflections on complex pasts and futures in Romance. *Lingua* 60, 183-214.
Forsyth, J. (1970). *A grammar of aspect*. Cambridge: Cambridge University Press.
Friedman, L. (1975) Space, time and person reference in American Sign Language. *Language* 51, pp. 940-961.
Giorgi, A. and F. Pianesi (1997). *Tense and aspect*. Oxford: Oxford University Press.
Green, L. (2000). Apectual *be*-type constructions and coercion in African American English. *Natural Language Semantics* 8, 1-25.
Grice, H. (1975). Logic and conversation. In P. Cole and J. L. Morgan (eds.), *Speech Acts*. Academic Press, NY. pp. 41–58.
Grose, D. (2003). *The perfect tenses in American Sign Language: non-manually marked compound tenses*. Master's thesis, Purdue University.
Grosjean, F. (1982). *Life with two languages: an introduction to bilingualism*. Cambridge, MA: Harvard University Press.
Halle, M. and A. Marantz. (1993). Distributed Morphology and the pieces of inflection. In K. Hale and S.J. Keyser (eds.), *The view from Building 20*. Cambridge, MA: MIT Press. 111-176
Heine, B. and M. Reh (1984). *Grammaticalization and reanalysis in African languages*. Hamburg: Helmut Buske.
Hinrichs, E. (1986). Temporal anaphora in discourses of English. *Linguistics and Philosophy* 9, 63-82.
Hockett, C. (1958). *A course in modern linguistics*. New York: The MacMillan Company.
Hoiting, N. and D. Slobin (2001). Typological and modality constraints on borrowing: examples from the Sign Language of the Netherlands. In D. Brentari (ed.), *Foreign vocabulary in sign languages: a cross-linguistic investigation of word formation*. Mahwah, NJ: Lawrence Erlbaum Associates. 121-137.
Hornstein, N. (1990). *As time goes by*. Cambridge, MA: MIT Press.

Iatridou, S., A. Anagnostopoulou, and R. Izvorski (2003). Some observations about the form and meaning of the perfect. In A. Alexiadou, M. Rathert and A. von Stechow (eds.), *Perfect Explorations*. Berlin: Mouton de Gruyter. 153-204.
Inoue, K. (1989). An analysis of the English present perfect. *Linguistics* 18. 561-589.
Janzen, T. (1995). *The poligrammaticization of FINISH in ASL*. Master's thesis, University of Manitoba, Winnipeg.
Janzen, T. (1998). *Topicality in ASL: Information ordering, constituent structure, and the function of topic marking*. Ph.D. dissertation, University of New Mexico, Albuquerque, N.M.
Janzen, T. (2003). FINISH as an ASL Conjunction: Conceptualization and Syntactic Tightening. Paper presented at the 8th International Cognitive Linguistics Conference, University of La Rioja, Spain.
Janzen, T. (2004). Space rotation, perspective shift and verb morphology in ASL. *Cognitive Linguistics* 15, 149-174.
Janzen, T. and B. Shaffer (2002). Gesture as the substrate in the process of ASL grammaticization. In R. Meier, K. Cormier, & D. Quinto-Pozos (eds.), *Modality and structure in signed and spoken languages*, pp. 199-223. Cambridge: Cambridge University Press.
Jones, P. (1978). On the interface of ASL phonology and morphology. *Communication and Cognition* 11, 69-78.
Jones, -- (1982). Digueno
Kamp, H., and U. Reyle (1993). *From discourse to logic*. Dordrecht: Kluwer Academic Publishers.
Kegl, J. (1976). Relational grammar and American Sign Language. Unpublished ms., Cambridge, MA.
Klein, W. (1992). The present perfect puzzle. *Language* 68: 525-552.
Klein, W. (1994). *Time in language*. London: Routledge.
Klein, W., P. Li, and H. Hendricks (2000). Aspect and assertion in Mandarin Chinese. Natural Language and Linguistic Theory 18, 723-770.
Klima, E. and U. Bellugi (1979). The signs of language. Cambridge. MA: Harvard University Press.
Kratzer, A. (1995). Stage-level and individual-level predicates as inherent generics. In G. Carlson and F. Pelletier (eds.), *The generic book*. Chicago: Chicago University Press. 125-175.
Krifka, M. (1992). Thematic relations as links between nominal reference and temporal constitution. In I. Sag and A. Szabolcsi (eds.), *LexicalMatters*. Menlo Park, CA: CSLI/SRI International. pp. 29–54
Krifka, M. (1998). The origins of telicity. In Rothstein, S. (ed.), *Events and grammar*. Dordrecht: Kluwer Academic. 197-236.
Krifka, M. (2000). Alternatives for aspectual particles: semantics of *still* and *already*. Paper presented at the Berkeley Linguistics Society conference.
Krifka, M., F. Pelletier, G. Carlson, A. ter Meulen, G. Chierchia, and G. Link. (1995). Generecity: an introduction. In G. Carlson and F. Pelletier (eds.), *The generic book*. Chicago: Chicago University Press. 1-124.

Landman, K. (1992). The progressive. *Natural Language Semantics* 1, 1-32.
Lane, H., R. Hoffmeister and B. Bahan (1996). *A journey into the Deaf-World*. San Diego, CA: Dawn Sign Press.
Langacker, R. (1972). *Fundamentals of linguistic analysis*. New York: Harcourt Brace Jovanovich.
Levinson, S. (1983). *Pragmatics*. Cambridge: Cambridge University Press.
Liddell, S. (1980). *American Sign Language syntax*. The Hague: Mouton.
Liddell, S. (1984). Unrealized inceptive aspect in American Sign Language: feature insertion in syllabic frames. In Drogo, Mishra and Testen (eds.), *Papers from the 20th regional meeting of the Chicago Linguistic Society*. Chicago: University of Chicago Press. p. 257-270.
Liddell, S. (2003). *Grammar, gesture and meaning in American Sign Language*. Cambridge: Cambridge University Press.
Liddell, S. and R. Johnson (1987). American Sign Language compound formation processes, lexicalization, and phonological remnants. *Natural Language and Linguistic Theory* 4, pp. 445-513.
Liddell, S. and M. Metzger (1998). Gesture in sign language discourse. *Journal of Pragmatics* 30, 657-698.
Lillo-Martin, D. (1991). *Universal Grammar and American Sign Language: setting the null argument parameters*. Dordrecht: Kluwer Academic Publishers.
Lillo-Martin, D. (1995). The point of view predicate in American Sign Language. In K. Emmorey and J. Reilly (eds.), *Language, gesture and space*. Hillsdale, NJ: Lawrence Erlbaum Associates. 155-170.
Lindfors, A. (2003). The *ku*-marker in Swahili. Unpublished ms., University of Uppsala.
Loebner, S. (1989). German *schon - erst - noch*: an integrated analysis. *Linguistics and philosophy* 12, 167-212.
Lucas, C. (1995). *Sociolinguistics in deaf communities*. Washington, D.C.: Gallaudet University Press.
Lucas, C., R. Bayley and C. Valli (2001). *Sociolinguistic variation in American Sign Language*. Washington, D.C.: Gallaudet University Press.
Lucas, C. and C. Valli (1995). *Linguistics of American Sign Language* (second edition). Washington, D.C.: Gallaudet University Press.
Lyons, J. (1977). *Semantics*. Cambridge: Cambridge University Press.
MacLaughlin, D. (1997). *The structure of determiner phrases: evidence from American Sign Language*. Ph.D. dissertation, Boston University.
MacWhorter, J. (1998). Identifying the creole prototype: vindicating a typological class. *Language* 74, 788-818.
Matthewson, L., L. Bar-el, and H. Davis (2004). Atelic accomplishments in St'at'imcets (Lillooet Salish). Paper presented at the 35th meeting of the Northeast Linguistic Society (NELS 35), University of Connecticut, Storrs.
Matusuoka, K. (1997). Verb raising in American Sign Language. *Lingua* 103, 127-149.
McCawley, J. (1993). *Everything that linguists have always wanted to know about logic but were too ashamed to ask* (second edition). Chicago: Chicago University Press.

McCoard, N. (1978). *The English perfect: tense-choice and pragmatic inferences*. Amsterdam: North-Holland.
Meier, R. (1990). Person deixis in American Sign Language. In S. Fischer and P. Siple (eds.), *Theoretical issues in sign language research, vol. 1: linguistics*, pp. 175-190. Chicago: University of Chicago Press.
Meir, I. (1998). *Thematic structure and verb agreement in Israeli Sign Language*. Ph.D. dissertation, The Hebrew University of Jerusalem.
Meir, I. (1999). A perfect marker in Israeli Sign Language. *Sign Language and Linguistics* 2, 41-60.
Mittwoch, A. (1988). Aspects of English aspect: on the interaction of perfect, progressive and durational phrases. *Linguistics and philosophy* 11, 203-254.
Moens, M. (1987). *Tense, aspect and temporal reference*. Ph.D. dissertation, University of Edinburgh.
Moens, M. and M. Steedman. (1988). Temporal ontology and temporal reference. *Computational Linguistics* 14, 15–28.
Neidle, C., J. Kegl, D. MacLaughlin, B. Bahan, and R. Lee (2000). *The syntax of American Sign Language: functional categories and hierarchical structure*. Cambridge, MA: MIT Press.
Padden. C. (1983). *Interaction of morphology and syntax in American Sign Language*. Ph.D. dissertation, University of California, San Diego.
Padden, C. (1986). Verbs and role-shifting in ASL. In C. Padden (ed.), *Proceedings of the fourth national symposium on sign language research and training*. Silver Spring, MD: National Association of the Deaf. 44-57.
Padden, C. (1990). The relation between space and grammar in ASL verb morphology. In C. Lucas (ed.), *Sign language research: theoretical issues*. Washington, D.C.: Gallaudet University Press. 118-132.
Parsons, T. (1990). *Events in the semantics of English*. Cambridge, MA: MIT Press.
Petronio, K. and D. Lillo-Martin (1997). Wh-movement and the position of spec-CP: evidence from American Sign Language. *Language* 73, 18-57.
Pfau, R. (2002). Applying morphosyntactic and phonological readjustment rules in natural language negation. In R. Meier, K. Cormier, & D. Quinto-Pozos (eds.), *Modality and structure in signed and spoken languages*, pp. 263-295. Cambridge: Cambridge University Press.
Pfau, R. and S. Glück (1999). The pseudo-simultaneous nature of complex verb forms in German Sign Language. Paper presented at the Western Conference on Linguistics, El Paso.
Pfau, R. and M. Steinbach (2004). On grammaticalization: do sign languages follow the well-trodden paths? Paper presented at the 8th International Conference on Theoretical Issues in Sign Language Research (TISLR8), Barcelona.
Pustejovsky, J. (1995). *The generative lexicon*. Cambridge, MA: MIT Press.
Rathmann, C. (2005). Ereignisstruktur in der Deutschen Gebärdensprache (Event structure in German Sign Language). Paper presented at the "Gebärdensprache – Interdisziplinäre Forschung an der RWTH Aachen", Aachen.
Reichenbach, H. (1947). *Elements of symbolic logic*. New York: MacMillan.

Rothstein, S. (2004). *Structuring events: a study in the lexical semantics of aspect*. Malden, MA: Blackwell.
Sandler, W. (1989) *Phonological representation of the sign*. Dordrecht: Foris.
Saussure, F. (1916). *Cours de linguistique general*. Paris: Payot.
Schein, J. (1989). *At home among strangers*. Washington, D.C.: Gallaudet University Press.
Schick, B. (1990). Classifier predicates in American Sign Language. *International Journal of Sign Linguistics* 1, 15-40.
Shaffer, B. (2000). *A syntactic, pragmatic analysis of the expression of necessity and possibility in American Sign Language*. Ph.D. dissertation, University of New Mexico.
Shaffer, B. (2004). Information ordering and speaker subjectivity: modality in ASL. *Cognitive Linguistics* 15, 175-195.
Senghas, A. (1995). *Children's contribution to the birth of Nicaraguan Sign Language*. Ph.D. dissertation, Massachusetts Institute of Technology.
Smith, C. (1991). *The parameter of aspect*. (first edition) Dordrecht: Kluwer Academic Publishers.
Smith, C. (1997). *The parameter of aspect*. (second edition) Dordrecht: Kluwer Academic Publishers.
Smith, C. (2003). *Modes of discourse: a study of local structure*. Cambridge: Cambridge University Press.
Smith, C. (2004). The domain of tense. In J. Gueron and J. Lecarme (eds.), *The syntax of time*. Cambridge, MA: MIT Press. 597-619.
Smith, C. and M. Erbaugh (2005). Temporal interpretation in Mandarin Chinese. *Linguistics* 43, 713-756.
Smith, C. E. Perkins and T. Fernald (2003). Temporal interpertation in Navajo. In J. Anderssen, P. Menéndez-Benito, & A. Werle (eds.), *The Proceedings of SULA2 (Semantics of Underrepresented Languages of the Americas 2)*. Amherst, MA: GLSA, University of Massachusetts. 175-192.
Spreng, B. (2002). Plural in German. *Proceedings of WECOL 2000*, 12.
Stokoe, W. (1960) Sign language structure: an outline of the visual communication system of the American deaf. Studies in linguistics, occasional papers no. 8 (revised and reprinted in 1978 as *Sign language structure*. Silver Spring, MD: Linstok Press.)
Supalla, T. (1986) The classifier system in American Sign Language. In C. Craig (ed.) *Noun classes and categorization*, pp. 181-214. Philadelphia, PA: John Benjamins.
Supalla, T. and E. Newport (1978) How many seats in a chair? The derivation of nouns and verbs in American Sign Language. In P. Siple (ed.) *Understanding language through sign language research*. New York, NY: Academic Press.
Sutton-Spence, R. and B. Woll (1999). *The linguistics of British Sign Language: an introduction*. Cambridge: Cambridge University Press.
Svantesson, J. (1994). Tense, mood and aspect in Kammu. In C. Bache, H. Basboll and C-E. Lindberg (eds.), *Tense, aspect and action – empirical and theoretical contributions to language typology*. Berlin: Mouton de Gruyter. 265-278.

Tang, G. (2004). Event boundedness in Hong Kong Sign Language. Paper presented at the 8th conference on Theoretical Issues in Sign Language Research (TISLR8), Barcelona.
Taub, S. (2001). *Language from the body: iconicity and metaphor in American Sign Language*. Cambridge: Cambridge University Press.
Taylor, B. (1977). Tense and continuity. *Linguistics and Philosophy* 1, 199–220.
Thompson, R. (2001). Aspects of aspectual markers in ASL. Paper presented at the 4th annual High Desert Linguistics Society (HDLS) conference, University of New Mexico, Albuquerque.
Van Geenhoven, V. (2004). *For*-adverbials, frequentative aspect and pluractionality. *Natural Language Semantics* 12, 135-190.
Vendler, Z. (1957). Verbs and times. *The Philosophical Review* 66, 143–160.
Vendler, Z. (1967). *Linguistics in philosophy*. Ithaca, NY: Cornell University Press.
Verkuyl, H. (1989). Aspectual classes and aspectual composition. *Linguistics and Philosophy* 12, 39-94.
Verkuyl, H. (1993). *A theory of aspectuality*. Cambridge: Cambridge University Press.
Vlach, F (1993). Temporal adverbials, tenses and the perfect. *Linguistics and Philosophy* 16, 231-283.
von Fintel, K. (1995). A minimal theory of adverbial quantification. In B. Partee and H. Kamp (eds.), *Context dependence in the analysis of linguistic meaning: proceedings of the Workshops in Prague*. Stuttgart. IMS Stuttgart Working Papers. 153-193.
Whorf, B. (1956). *Language, thought and reality*, ed. J. Carroll. Cambridge, MA: MIT Press.
Wilbur, R. (1987). *American Sign Language: linguistic and applied dimensions*. Boston: Little, Brown and Company.
Wilbur, R. (2004). Complex predicates involving events, time and aspect: is this why sign languages look so similar? Paper presented at the 8th International Conference on Theoretical Issues in Sign Language Research (TISLR8), Barcelona.
Wilbur, R. and S. Wood (2000). When is a modality effect not a modality effect? Aspectual marking in signed and spoken languages. Paper presented at the Texas Linguistics Society 2000 Conference, The University of Texas at Austin.
Wilcox, S. (2004). Gesture and language: cross-linguistic and historical data from signed languages. *Gesture* 4 (1), 43-73.
Winston, E. (1989). Timelines in ASL. Paper presented at the Deaf Way conference, Washington, D.C.
Xiao, Z. and A. McEnery (2004). A corpus-based two-level model of situation aspect. *Journal of Linguistics* 40, 325-363.
Zeshan, U. (2000). *Sign Language in Indopakistan: a description of a signed language*. Amsterdam: Johns Benjamins.
Zimmer, J. and C. Patschke (1990). A class of determiners in ASL. In C. Lucas (ed.), *Sign language research: theoretical issues*. Washington, D.C.: Gallaudet University Press. 201-210.

Zucchi, S. (1998). Aspect shift. In S. Rothstein (ed.), *Events and grammar*. Dordrecht: Kluwer. 349-370.
Zucchi, S. (1999). Incomplete events, intensionality and imperfective aspect. *Natural Language Semantics* 7, 179-215.
Zwitserlood, I. (2003). *Classifying hand configurations in Nederlandse Gebarentaal (Sign Language of the Netherlands)*. Ph.D. dissertation, University of Utrecht.

VITA

Christian Georg Rathmann was born in Jena, Germany, on September 3, 1970, the son of Cordula Antonie Rathmann and Matthias Friedrich Rathmann. After completing his work at *Schwerhoerigengynmasium* in Berlin, Germany in 1991, he entered *Universitaet Hamburg* in Hamburg, Germany. During the summer of 1995, he attended the LSA Summer Linguistics Institute at the University of New Mexico, Albuquerque. He completed the equivalent of the B.A. degree (*Zwischenpruefung)* in May 1996. In September 1999, he entered the Graduate School of The University of Texas at Austin. Since then, he has since taught undergraduate- and graduate-level courses related to signed languages at various places. He has published a number of articles on the linguistic structure of signed languages, including "Is verb agreement the same cross-modally" in *Modality and structure in signed language and spoken language*, edited in 2002 by R. Meier, K. Cormier and D. Quinto-Pozos; and "Situation Types in American Sign Language" in *The proceedings of SULA 2 (Semantics of Under-Represented Languages in the Americas*, edited in 2003 by J. Anderssen, P. Menendez-Benito, and A. Werle.

Permanent Address: 961 Hunter Avenue, Columbus, Ohio 43201

This dissertation was typed by the author.